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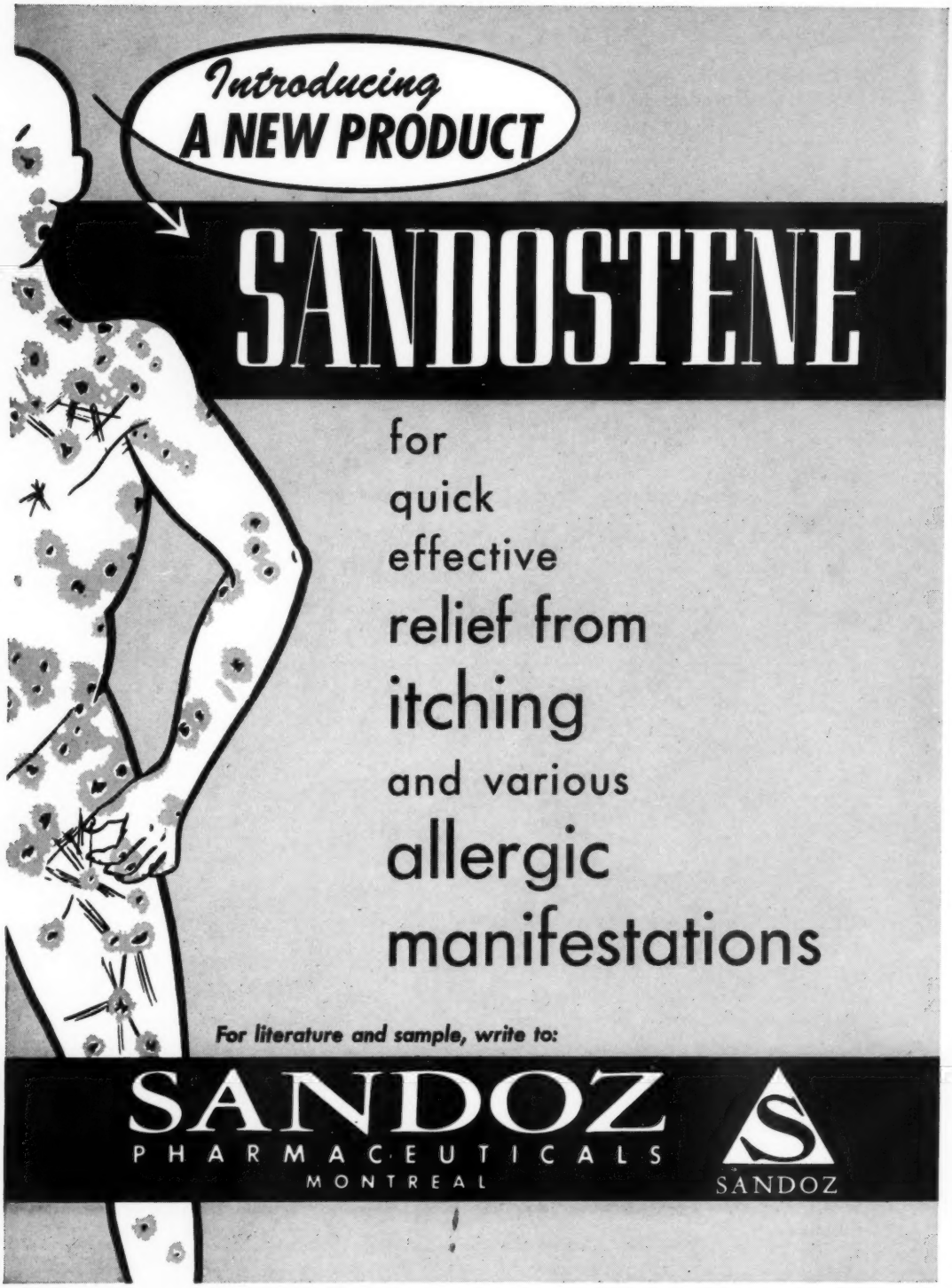
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The Manitoba Medical Review

Vol. 37 OCTOBER, 1957 No. 8

Medicine

Male Hypogonadism

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The testis has two major functions, namely the maintenance of fertility by means of spermatogenesis and the maintenance of masculinity by means of its endocrine activities. Testicular insufficiency may be manifested by impairment of either or both of these interrelated processes.

The production of spermatozoa, a property of the seminiferous tubules, may be considered to be the primary function of the testis.[24] The endocrine activity of the Leydig cells exerts at least some control over spermatogenesis and controls the development and maintenance of male secondary sexual characteristics.

States of deficient testicular function have been recognized for centuries. Until recently, the study of the hypogonadal male was perhaps the most neglected and poorly understood field of endocrinology. This may be attributed to the relative scarcity of patients, the confusion in terminology and the lack of clear delineation of syndromes. The advent of testicular biopsy and the modern advances in technics of hormonal assay have stimulated major advances in this field.

Histologic Appearance of Normal Testis at Various Ages[3]

The adult testis consists of interstitial tissue and seminiferous tubules. The interstitial tissue includes fibrocytes, connective-tissue cells and the characteristic intertubular islands of Leydig's cells. The seminiferous tubule is lined by a basement membrane and contains germinal epithelium and the sustentacular cells of Sertoli. The germinal epithelium is comprised of spermatogonia, primary and secondary spermatocytes, spermatids and spermatozoa.

The seminiferous tubules in the fetal testis are small solid cords of undifferentiated cells, separated by an epithelioid interstitium of solidly packed Leydig's cells. This remarkable preponderance of Leydig's cells is considered to result from stimulation of the testis by maternal chorionic gonadotropic hormone that has diffused across the placental barrier. After birth, the Leydig cells disappear rapidly and completely from the interstitium.

During childhood, the interstitial tissue remains immature but the tubular tissues change gradually and progressively in the direction of maturity. At puberty, the tubules uniformly progress to full maturity, followed by reappearance and maturation of the Leydig cells. These changes are brought about by pituitary gonadotropic activity.

No great change in testicular structure occurs in senility. Some thinning of the germinal epithelium may take place, with reduction in the number of Leydig's cells.

Some Aspects of Testicular Physiology

Pituitary Gonadotropic Hormones—Certain anterior-pituitary hormones are recognized to have a stimulating influence on the gonads. Each gonadotropic hormone elaborated in the male is considered to be identical to the analogous hormone produced by the female.

Follicle-Stimulating Hormone (FSH) — This glycoprotein is absent in the pituitary gland of the newborn, increases slowly during childhood, and is formed in large amounts from the onset of puberty throughout adult life.[10, 11] It first appears in the urine about the time of puberty. FSH appears to control differentiation of the seminiferous tubules and spermatogenic function.[20]

Luteinizing Hormone (LH) — This also appears in the pituitary in measurable quantities about the time of puberty, probably later than FSH.[10, 11] It controls the differentiation and function of Leydig's cells. In males, LH is often called interstitial cell-stimulating hormone (ICSH). Chorionic gonadotropin of pregnancy closely mimics the action of LH when administered to males, stimulating the Leydig cells to secrete testosterone.[20]

While the presence or absence of FSH and LH in pituitary tissue and urine can be established rather satisfactorily by certain biologic tests, the hormones themselves never have been isolated in pure form. These two hormones are ordinarily measured collectively as gonadotropins. Methods have not yet been devised that are capable of detecting FSH or LH in the circulating blood of the male.[2]

Lactogenic Hormone (Luteotrophin, Prolactin) —This hormone has no known functions in the male.

Adrenocorticotropic Hormone (ACTH) — Although, strictly speaking, ACTH is not a gonadotropic hormone, it is included here because it stimulates the reticular zone of the adrenal cortex to produce androgens that are excreted in the urine, forming some 70 per cent of the 17-ketosteroid fraction. The role of adrenal androgens in the

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development and maintenance of spermatogenesis and the male accessory reproductive organs is not well understood. The hormones probably play a part in the growth of axillary and pubic hair.[25]

Testicular Hormones — The testis elaborates both androgenic and estrogenic principles. Some workers also postulate the production of a hormone called "inhibin," which is said to inhibit and regulate pituitary gonadotropic secretion.

Testosterone — Secreted by mature Leydig's cells in response to stimulation by LH, testosterone is the chief androgenic hormone of testicular origin. It is excreted in the urine in the 17-ketosteroid fraction, largely as androsterone, which may be regarded as a degradation product. The chemical structure of testosterone has been clearly established, and various therapeutic preparations are available.

Testosterone has many profound and widespread effects on the body.[34] It controls the development and maintenance of the male reproductive organs — penis, prostate, seminal vesicles and epididymides—and is responsible for the masculine psyche, libido and potency. It initiates and maintains the beard and thoracic hair and has some effect on pubic and axillary hair. Testosterone brings about increased muscular bulk and strength, helps control the closure of the epiphyses at puberty and encourages retention of nitrogen.

It is generally agreed that testosterone in normal quantities helps stimulate and regulate spermatogenesis. Serious deficiencies in the production of testosterone are almost invariably accompanied by sterility. On the other hand, testosterone alone, in the absence of FSH, will not maintain spermatogenesis; in fact, continual administration of testosterone in large doses leads to suppression of spermatozoal production in man, [18, 22] probably through inhibition of the pituitary.

Estrogens — These hormones have been demonstrated in the testes of stallions, hogs and humans; they are excreted in the urine of male animals in measurable quantities. Although it is generally assumed that they originate in the Leydig cells, estrogens recently have been recovered from bull semen,[39] and it has been known for a long time that Sertoli cell tumors in dogs[12] and humans [40] are highly estrogenic and feminizing. The action of chorionic gonadotropin is believed to be a stimulation of Leydig's cells, and administration of this substance to adult males with intact testes produces an increase in urinary estrogens of five to 15 times, with a twofold increase in 17-ketosteroids.[31] This response does not occur in those who have primary testicular disease.

Estrogens inhibit pituitary gonadotropic activity, which has led many observers to suggest that testicular estrogens act as a biologic "feed-back" mechanism controlling the secretion of gonadotropins. This would be analogous to the action of thyroid hormone and cortisone on the secretion of thyroid-stimulating hormone (TSH) and ACTH, respectively. Even extremely small doses of estrogens will reduce the high levels of urinary gonadotropins in eunuchs, while testosterone is relatively ineffective in this respect.[33]

Inhibin — This is the "X" hormone.[25, 26] This hypothetic hormone never has been isolated, but some circumstantial evidence favors its existence. It is postulated that it is formed in the seminiferous tubules, probably the Sertoli cells, under stimulation by FSH and that it normally inhibits further secretion of FSH while stimulating secretion of LH[23]. It also is suggested that the "X" hormone plays an essential part in spermatogenesis. In this concept, inhibin is the strict analogue of estrogen in the female[12]. Primary testicular diseases with tubular destruction, such as Klinefelter's syndrome, are characterized by an increased urinary excretion of FSH, suggesting pituitary overactivity as a result of the absence of inhibin.

However, it is a maxim of endocrinology that the apparent level of any hormone increases if its target organ is destroyed. This "utilization hypothesis" would explain the high FSH levels in primary testicular disease without recourse to the inhibin theory.[12, 21]

Other Factors Influencing Testicular Function[25] Malnutrition is a well-known cause of infertility, probably because of a relative pituitary depression. Deficiency in vitamin E causes degeneration of the seminiferous tubules in rats, but it is not clear if this has any significance in man.

Excessive heat causes tubular damage in humans; even febrile episodes may produce temporary lessening of fertility. The scrotum acts as a thermoregulatory mechanism, keeping the testes at the optimal temperature for spermatogenesis. This explains sterility in bilateral cryptorchism. Roentgen irradiation of the testes damages the gametogenic elements. Various toxins, bacterial or chemical, have deleterious effects on spermatogenesis, while debilitating diseases of any kind may cause testicular depression. Endogenous estrogens are not properly inactivated in chronic hepatic diseases, such as cirrhosis, which may result in sterility and feminization. Degenerative and traumatic lesions of the spinal cord may lead to gonadal atrophy[13, 37]. The mechanism of this change is not understood.

Effects of Castration (Eunuchism)

Complete removal of the male gonads obviously causes sterility and deficiency of testosterone. The resultant clinical picture depends greatly on the age at which castration occurs. A normal prepubertal child is hypogonadal by definition; hence, the characteristic signs of prepubertal castration will not become apparent until the person has passed the age at which puberty would have occurred.

Effects of Prepubertal Castration[25] — These effects include sterility and the persistence of infantile genitalia. The beard and thoracic hair are

scanty or absent. Temporal recession of scalp hair and baldness do not occur. The axillary and pubic hair is scanty, and a female type of escutcheon is present. Epiphysial closure is delayed, with abnormally long limbs, hands and feet (eunuchoid habitus). The arm span is greater than the height, and the distance from the pubis to the sole of the feet is greater than that from the pubis to the vertex. Muscular bulk and strength are diminished. A female type of distribution of fat is noted. "Castration cells" appear in the pituitary[3,4], and increased levels of urinary gonadotropins occur. The libido and potency are poor, and the larynx remains small, resulting in a high-pitched voice.

Effects of Postpubertal Castration[3] — Certain features of the normal adult male, once developed, undergo little change after castration. The general proportions of the body cannot be altered after epiphysial closure has occurred; hence, the eunuchoid habitus will not appear. Libido and potency may be unaffected by castration. Other organs appear to be more sensitive to deprivation of androgen. The prostate and seminal vesicles atrophy. Increased nervous instability, a tendency for development of the female distribution of fat, and muscular weakness and flabbiness frequently are noted. The level of urinary gonadotropins is increased and the excretion of 17-ketosteroids is decreased. Sterility is present, of course.

Diagnostic Procedures in Male Hypogonadism

History — A careful chronologic history is essential, with particular attention to childhood development in general and the age of onset of puberty. The patient should be asked about past fertility and the state of his libido. Possible etiologic factors such as mumps orchitis, infections, severe debilitating disease of any type, hepatic disease, previous administration of hormones (estrogens or androgens), and scrotal operations, irradiation or trauma, should be noted.

Physical Examination — Thorough examination usually determines whether the androgenic level is decreased and whether the onset was prepubertal or postpubertal. Previous administration of testosterone may obscure many of the classic signs of hypoandrogenism already described. Careful measurements of the body (span, height, etc.) should be made in all cases of suspected male hypogonadism, as the eunuchoid habitus may not be apparent on cursory examination. One also should note the degree of muscular development, distribution of fat and hair, texture of the skin, presence of abnormal mammary tissue and the size of the external genitalia. Prostatic size is a sensitive indicator of the supply of androgen. Signs of panhypopituitarism should be sought.

Routine Laboratory Studies—These should be done in all cases, as hypogonadism may be extratesticular in origin. Visual fields should be plotted if the presence of a tumor of the pituitary is suspected. Special roentgenologic examinations for bone age and the status of the sella turcica may be indicated in some cases.

Urinary Hormonal Assays — Pituitary gonadotropic hormones may be found in the urine during and after puberty. The test for these hormones is a bio-assay, and it may be performed in various ways. At the Mayo Clinic[1], the gonadotropic fraction from a 24-hour collection of urine is injected into immature female rats. The presence of gonadotropin is indicated by ovarian changes, and the value is reported in "rat units." Normal adult males show mean values of 5 to 10 units. Decreased values or absence of hormone suggests that the hypogonadism is of pituitary origin. Negative results occasionally are obtained in completely normal males; however, further determinations will usually give normal values. Greatly increased values (50 to 800 units) are seen in primary testicular diseases.[2] Howard and associates classified hypogonadism in males on the basis of the level of urinary gonadotropins.

The test as a research tool has greatly enriched understanding of male hypogonadism. It is also useful as a clinical tool, but it is costly and time-consuming and its diagnostic accuracy has not been entirely settled. It requires laboratory facilities that are not available in many instances. Although values for the test are usually reported in units of FSH, many workers have shown that urinary gonadotropin is a mixture of FSH and LH in proportions that have not been determined exactly for various clinical states or, for that matter, for the normal male.[4]

Urinary 17-ketosteroids are an indicator of the production of androgen; however, as only 25 to 30 per cent is of testicular origin, it can be seen that this estimation is of limited value from a differential diagnostic aspect. Extremely low values suggest panhypopituitarism.

Urinary corticoids and estrogens can be measured but are of corroborative value only in most instances.

Chorionic - Gonadotropin Test — This test measures the ability of the testis to respond to stimulation by chorionic gonadotropin. The urinary 17-ketosteroids are measured before and after injection of appropriate doses of chorionic gonadotropin for 5 to 17 days.[3,9] In normal males and in patients who have pituitary hypogonadism, the 17-ketosteroids increase by an average value of 7 mg. in a 24-hour specimen. If administration is continued for a month or more, a clinical response, manifested by such evidence as initiation of sexual development and penile erections, may be obtained in pituitary hypogonadism. This test has been used by Heller and Nelson as the basis for a classification of hypogonadal disorders.

Examination of Seminal Fluid — The specimen of semen is collected manually and the ejaculate is examined for motility and the presence of abnormal forms; spermatozoal counts are done.

Examination for seminal fructose has been advocated by Tyler as an index of androgenic function.

The lower limit of normality in the sperm count is still unsettled. On the basis of extensive studies, McLeod concluded that men with sperm counts of more than 20,000,000 spermatozoa per milliliter of semen should be regarded as potentially fertile. Tyler and Singher suggested that a sperm count of 50,000,000 should be regarded as normal.

Because normal ejaculate is rarely seen in the presence of significantly impaired function of Leydig's cells, examination of semen is a useful preliminary screening test. While the presence of normal semen for all practical purposes rules out androgenic deficiency, an abnormal ejaculate does not necessarily imply that the function of Leydig's cells is depressed. Conversely, normal androgenic function does not necessarily give assurance of adequate spermatogenesis.

Testicular Biopsy[3, 38] — Testicular biopsy has proved to be the most valuable single diagnostic test in the investigation of hypogonadism. Albert and associates[4] stated that, "The morphologic diagnosis based on testicular biopsy has generally provided the same information that can be obtained from either or both the therapeutic response to chorionic gonadotropin and the assay for urinary gonadotropin, and does so more rapidly. In addition, biopsy has proved to be much more critically diagnostic than urinary gonadotropin."

Testicular biopsy is a simple and harmless procedure, usually requiring only local anesthesia; it may be performed in the office or on a hospital-outpatient basis. Incisional biopsy usually provides a more satisfactory specimen than does needle biopsy. The morphologic classification of male hypogonadism is based primarily on testicular biopsy.

Definition of Terms[4]

Hypogonadism — This term is used by some authors to indicate deficiency of androgen only. In this presentation, hypogonadism will imply defective function of either the tubules or the Leydig cells or both.

Sterility — Males with hypogonadism of any significant degree are usually, but not invariably, infertile. Conversely, sterility may be caused by such lesions as vasal strictures in the presence of perfectly normal testes.

Eunuch—The eunuch is a person without testes, or a castrate.

Eunuchoid—This is a person who has testes but who has certain features similar to those of persons castrated before puberty, particularly the body configuration and habitus. Thus, eunuchoidism is a physical sign of androgenic deficiency developing before puberty; it is not a syndrome or a diagnosis, being a feature of several different types of hypogonadism. Various authors use the term in differing senses.

Primary Hypogonadism—This signifies intrinsic testicular disease, even though the testicular dysfunction may be consequent to such extrinsic factors as roentgen radiation, excessive heat, infections and toxins. The values for urinary gonadotropin are usually increased.

Secondary Hypogonadism — Testicular failure as a result of failure of the pituitary gonadotropic function results in secondary hypogonadism. Urinary gonadotropins are decreased or absent.

Classification of Male Hypogonadism

There are many classifications of male hypogonadism. The recent classification advocated by Albert and co-workers[4] is in use at the Mayo Clinic and will be followed with minor simplification, in this presentation. It is primarily morphologic, as it is based on testicular biopsy, with subgroups arranged on the basis of certain key clinical and laboratory data.

By use of this classification, all known hypogonadal testicular diseases may be grouped into four major categories, namely (1) those in which mature recognizable Leydig's cells are absent or atrophic (pituitary hypogonadism), (2) those in which mature Leydig's cells are present (primary tubular hypogonadism), (3) those in which abnormalities involve both tubules and Leydig's cells (anorchia and "hyporchia") and (4) those in which a mixture of two or more independent diseases is present in the same testis.

Group I: Pituitary Hypogonadism

Testicular biopsy in all members of this group reveals that recognizable mature Leydig's cells are absent or atrophic. This is caused by failure of secretion of LH. In most cases, failure of secretion of FSH also is present and the tubules are correspondingly immature or atrophied.

The group is subdivided on the basis of three further characteristics, namely whether one or both gonadotropic hormones are missing, whether other pituitary hormones are present or not and whether the age of onset was before or after puberty. Urinary gonadotropins are decreased or absent in all cases.

Subgroup A — If both FSH and LH are lacking and the onset was before puberty, testicular biopsy will show immature tubules and absence of Leydig's cells. Two clinical syndromes are recognized.

Pituitary Dwarfism[5]— The pituitary defect is multiple, with failure of elaboration of all the pituitary hormones, including growth hormone, adrenotropin and thyrotropin, as well as FSH and LH. This may result from neoplastic involvement of the pituitary during childhood, but often it is idiopathic, representing an intrinsic lack of development of pituitary function occurring early in life. As the growth hormone is absent, the patient will not have the eunuchoid habitus but will be dwarfed. The habitus is childlike, all secondary sexual characteristics are infantile and

all assay values for urinary hormones (estrogens, gonadotropins, ketosteroids and corticoids) are decreased or zero. Aspermia is present.

Prepubertal Gonadotropic Failure[6]— The pituitary defect in this syndrome is single, involving only the gonadotropins FSH and LH. This type of hypogonadism is also termed "hypogonadotropic eunuchoidism" and "idiopathic eunuchoidism with low FSH." Roentgenologic evidence of disease in the region of the pituitary is absent and the cause is completely unknown. Because normal pituitary function, except for gonadotropins, is present, these patients have the eunuchoid habitus, with infantile genitalia and secondary sexual characteristics. Urinary gonadotropins are absent and urinary 17-ketosteroids are decreased; however, values for urinary corticoids are normal because adrenal function is normal. Gynecomastia may or may not be present. Aspermia is present. Between 25 and 60 per cent of all cases of eunuchoidism fall into this group.

Subgroup B — If both FSH and LH are lacking and the onset was after puberty, testicular biopsy will show atrophy of the tubules rather than immaturity. Leydig's cells, if present, are atrophic. Two clinical syndromes may be recognized.

Multiple Defects of Adult Pituitary Function[7]— This syndrome includes patients suffering from tumor, infarction or atrophy of the pituitary. Some or all of the classic features of panhypopituitarism in the adult are present. As these patients have attained a mature adult habitus before the onset of their disease, they are not eunuchoidal. Urinary gonadotropins are absent, and estrogens, ketosteroids and corticoids are decreased or absent. Azoospermia is present.

Gonadotropic Failure in Adults[8]—This syndrome is manifested by discrete loss of gonadotropic secretions only, with pituitary function remaining normal in other respects. These patients previously were sexually mature and fertile. The pituitary defect may be spontaneous (idiopathic) in origin or it may result from administration of testosterone or estrogen to men with previously normal pituitaries. The syndrome also may be seen in hepatic disease and general systemic debilitating diseases. The habitus is normal and urinary gonadotropins are absent; however, urinary corticoids are normal. The testes should respond to administration of chorionic gonadotropin. These cases have been designated as "adult hypogonadotropic hypogonadism."

Subgroup C—If FSH is present but LH is lacking (partial gonadotropic failure), testicular biopsy will reveal mature tubules with spermatogenesis but Leydig's cells will be absent. Signs of androgenic deficiency are present, yet the ejaculate may contain spermatozoa that are normal for the patient's age. Assays for urinary hormones are often normal, including values for gonadotropins. These criteria are fulfilled in four clinical circumstances.[9]

Normal Puberty—In the induction of puberty, FSH is probably secreted first, leading to tubular differentiation and spermatogenesis. Secretion of LH begins later, causing stimulation of Leydig's cells, secretion of testosterone and the appearance of all the well-known signs of puberty. Thus, FSH activity may be manifest in the normal testis at a certain stage in puberty without any LH activity. This, of course, is not a pathologic state.

Delay of Puberty—Patients in this group range from 17 to 22 years of age and represent a prolongation of the normal developmental stage. Considerable tubular maturation may be noted, but Leydig's cells are absent and secondary sex characteristics are infantile. It is believed that such persons will undergo normal puberty without therapy if sufficient time elapses; however, administration of chorionic gonadotropin will hasten the onset of maturation of Leydig's cells and prevent the appearance of a eunuchoid habitus. Once induced, maturity is retained permanently even if treatment is discontinued.

Arrest of Puberty—In this group, puberty is not completed spontaneously no matter how much time elapses. These patients are often middle-aged when they first come for advice; if untreated previously, they are eunuchoid and androgenically deficient. As the tubules may show spermatogenesis and because some of these patients are presumed to be fertile, McCullagh and associates used the term "fertile eunuchs" in designating this group. Administration of chorionic gonadotropin to these patients stimulates androgenic activity, which is not maintained after cessation of treatment.

Pituitary Tumors—In certain instances, a pituitary tumor may cause a discrete loss of LH function in the early stage of development of pituitary failure. Other tropic hormones will be lost in time if the tumor is permitted to grow.

Group II: Primary Tubular Hypogonadism

Testicular biopsy shows mature Leydig's cells, which may be normal, abnormal or clumped. The lesions are primarily tubular. The testicular disease is primary and is often idiopathic. Urinary gonadotropins are usually increased.

Klinefelter's Syndrome — In this group, the Leydig cells are "hyperplastic" and arranged in clumps or adenomalike formations. The tubules show varying degrees of sclerotic destruction.

In 1942, Klinefelter and associates reported on nine patients, all of whom had increased FSH, small testes and gynecomastia; otherwise, the male secondary sexual characteristics were normal. Azoospermia was present. It is now recognized that there is a great deal of variability in patients with Klinefelter's syndrome with regard to the presence of gynecomastia and the eunuchoid habitus. It has been shown recently by studies of sex chromatin that some patients with the classic

clinical and histologic features of Klinefelter's syndrome are genetically female.[14, 38] The explanation of this rather startling finding is still undecided. Much remains to be learned about the etiology, pathogenesis and true nature of Klinefelter's syndrome.

Germinal Aplasia (Del Castillo's Syndrome)—Testicular biopsy shows normal mature Leydig's cells, but the tubules contain only Sertoli's cells. Germinal epithelium is completely absent. The habitus and androgenic function of these patients are normal. Urinary gonadotropins are increased, although normal levels of urinary FSH were reported in Del Castillo's original cases.[16] Azoospermia is present and urinary steroids are normal.

Sterility Problems—By far the commonest type of male hypogonadism is represented by the male who has normal androgenic function and who is sterile, which is, of course, the significant factor in many barren marriages. Testicular biopsy shows normal Leydig's cells, plus various degenerative, atrophic and aplastic changes in the seminiferous tubules. Persons with such changes may be subdivided into several categories depending on the nature of the defect in spermatogenesis.

Since Leydig's cells are not affected, puberty occurs normally, and defects in androgenic function or skeletal proportions are absent. Gonadotropins may be normal or increased, but urinary steroids are normal. Examination of semen reveals oligospermia or azoospermia, often with a high percentage of abnormal forms.

Vasal block, congenital defects, radiation injury, trauma, high temperatures, infections and early cryptorchism are some of the known etiologic factors, but many cases are idiopathic in nature.

Group III: Primary Anorchia and Hyporchia

In this group, the lesion involves both interstitial and tubular tissue. Hyporchia implies partial destruction of testicular tissue and function, whereas anorchia indicates complete destruction or congenital absence. As the hypogonadism is primary, urinary gonadotropins are increased.

If the lesion occurs before puberty, the patient will have eunuchoidism and decreased androgenic function, with a decrease in urinary 17-ketosteroids and estrogens. While anorchia may be congenital, infections such as mumps may destroy the immature testis, with resultant azoospermia.

In adults with previously normal testes, lesions may develop that affect both interstitial and tubular tissue. Vascular occlusion, trauma or infections may be etiologic factors. In the end stages of cryptorchism, similar testicular degeneration is found. Androgenic function may be low if sufficient testicular tissue is affected, but the patient is never eunuchoid; 17-ketosteroids are decreased. Depending on the extent of tubular damage, the ejaculate may contain normal spermatozoa or azoospermia may be present.

Group IV: Combinations of Two or More Diseases

Testicular lesions classed in group III may develop in persons with testicular defects classed in group I or II. Such persons are classified under group IV as having combinations of two or more independent diseases in the same testis.

Conditions Misdiagnosed as Male Hypogonadism

Homosexuality is not a symptom of male hypogonadism; in fact, the homosexual person rarely shows deficient androgenic or spermatogenic function.

Impotency is a common but not invariable symptom of androgenic deficiency. Eunuchs may be sexually potent. Most men complaining of impotency have a psychologic rather than an endocrinologic basis for their difficulty.

The majority of fat boys with small genitalia do not have Froehlich's syndrome and will undergo normal puberty if left alone. True Froehlich's syndrome caused by a suprasellar tumor is a great rarity.

The diagnosis of male climacteric is frequently applied by some physicians to middle-aged men who have vasomotor instability, fatigue, loss of pep and failing potency. We and our associates consider that the male climacteric is an extremely rare malady. Biopsy has shown that the testis of the elderly man does not undergo the profound involutional changes seen in the ovary after the menopause. It is well known that administration of testosterone has a stimulatory effect that is not dependent on overt androgenic deficiency. Albert[2] has shown that normal elderly men may have a moderate increase of urinary gonadotropins in the absence of any symptoms attributed to gonadal failure.

Treatment of Male Hypogonadism

Removal of Primary Cause — Hypogonadism secondary to debilitating diseases, hepatic disorders, starvation or misguided administration of hormones may be relieved by treating or eliminating the primary cause. The relative merits of hormonal and surgical treatment of cryptorchism are still warmly debated. Although it has been said that surgical correction of the undescended testis has only cosmetic value,[26] a recent report by Gross and Jewett indicated that testicular function may be preserved in a large number of cases by such procedures.

Use of Chorionic Gonadotropin—Theoretically, this hormone should prove efficacious in all cases in which testicular function is depressed by pituitary disease; however, the results are often disappointing. Chorionic gonadotropin acts mainly on the Leydig cells, and one would not expect improvement in tubular function to occur commonly. Also, such treatment is extremely costly and prolonged, and it may have to be terminated because of allergic reactions and formation of antihormones.[27] Prepubertal administration of this agent for bilateral cryptorchism must be done

under close observation to avoid premature closure of the epiphyses and undesirable sexual stimulation.

Chorionic gonadotropin appears to be most useful in the treatment of delayed puberty. Therapy can be discontinued once the function of Leydig's cells has been established.

Use of Testosterone — In its various forms, testosterone is the most commonly used therapeutic agent. It is relatively inexpensive and is available in injectable, oral and buccal preparations and in the form of pellets; its use may be continued indefinitely. The primary indication for administration of testosterone is androgenic deficiency from any cause. Only rarely does it effect any improvement in fertility when given in the customary fashion, although a few exceptions have been reported.[24, 43] McCullagh and associates stated that gynecomastia develops in 25 per cent of treated patients. Because of the great incidence of prostatic malignant lesions in elderly men, many authorities caution against use of testosterone in patients more than 50 years of age.

An interesting new development in therapy is based on the "spermatogenic rebound" phenomenon. The well-known testicular depression resulting from administration of large doses of testosterone is followed, some months after discontinuation of treatment, by a rebound improvement in spermatogenic function, which often is better than the pretreatment level.[22] Heckel and associates, in 1951, reported good results from such treatment of a group of oligospermic infertile men with normal androgenic function. Charny, in a recent survey, indicated that about 20 per cent of those treated will show pronounced improvement in spermatogenic function. Careful selection of cases is necessary, but it appears that an encouraging number of men who have primary tubular dysfunction may be benefited by such treatment. Improvement in male fertility by producing a spermatogenic rebound with estrogen therapy has recently been reported.[28]

Summary

Testicular functions include spermatogenesis, controlled by follicle-stimulating hormone (FSH), and production of hormones, controlled by luteinizing hormone (LH). Both these hormones originate in the pituitary. Hypogonadism consists of impairment of either or both of these functions, and it may be primary or secondary to disease of the pituitary.

Testicular biopsy is the most valuable diagnostic tool in the study of male hypogonadism. The morphologic classification is based primarily on the findings of testicular biopsy.

Replacement therapy with testosterone is still the mainstay of treatment of male hypogonadism.

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Surgery

Diverticulosis and Diverticulitis of the Colon

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Inflammatory conditions of the colon are exceedingly common. If one considers all the diarrhoeas, whether acute or chronic, there is a whole field for the psychologist, bacteriologist and clinician. In fact, the old philosopher Josh Billings stated that he had come to the conclusion that a reliable set of bowels were more important to a man than any quantity of brains.

Diverticulitis, a complication of diverticulosis, is a relatively common disease with occasional tragic complications and is often a difficult problem in diagnosis and management. It is quite obvious that many of the cases that were operated upon and reported as inoperable carcinoma, and subsequently survived for many years, were actually diverticulitis.

The sigmoid is the commonest site of the disease, although the whole colon may be involved, and it is said that diverticulosis occurs in 30% of people over the age of 60. Males are more commonly affected than females (Fig. 1). The theories of origin are varied, but it is generally conceded that diverticula occur at the point where the arterioles penetrate the muscle coat of the colon, usually on the mesenteric edges of the longitudinal bands. In the caecum diverticula occur that usually contain all coats of the bowel, and these are usually the cases where double or triple appendices have been reported. Diverticulitis in this area is rather rare, but does occur. Hemicolectomy has been done in these cases in the belief that they were carcinoma.

Most diverticula are considered to be of the pulsion type, caused, it is thought, by increase of pressure within the colon and a degenerating musculature due to advancing age. When this occurs the mucosa herniates through the muscle to form the flask-like pouches as commonly seen. Actually, before this typical stage develops one can see by x-ray the very beginning of this disease when only points of the mucosa actually project through the muscle. This very early stage is usually recognized radiologically by a so-called "ripple edge" or "saw-toothed" border.

Many, perhaps most cases of diverticulosis are unrecognized throughout life, as no symptoms develop and the diverticula are seen only by chance, either radiologically or at autopsy. However, in a relatively small percentage diverticulitis develops.

Diverticula, though they may be scattered throughout the large bowel, generally cause trouble in the vicinity of the sigmoid, probably because at this point the feces are more solid and also contain more bacteria and the musculature is heavier and more compact. It has been suggested that the diverticula become blocked from fruit seeds, vegetable fibres or other debris, producing what amounts to a small closed loop obstruction, similar to the pathological process in appendicitis.

Also, it is considered that for some reason not yet known, spasticity of the colon occurs from time to time, which causes closing of the neck of one or several diverticula, converting them similarly into closed loops and thereby allowing infection to progress within them because of lack of drainage. If this spasm is not relieved and increase of pressure within the diverticulum develops, this may give rise subsequently either to perforation into the general peritoneal cavity causing a virulent and generalized peritonitis or to a spread of infection beneath the serosa of the colon, or even into the appendices epiploicae. When diverticulitis occurs there it may give rise to what, at first glance seems to be either a left-sided appendicitis, a general peritonitis, or a hard, tender mass suggestive of a carcinoma of the sigmoid. (Fig. 2).

There are other curious symptoms which may arise during the course of this disease, such as flatulence, upper abdominal distension or reflex dyspepsia. There may be diarrhoea, a feeling of incomplete evacuation, lower abdominal discomfort and even such vague symptoms as lumbago and neuritis that are difficult to explain.

It was taught once that one of the methods of distinguishing this condition from that of carcinoma is the absence of bleeding in the former, but in reviewing our cases we found that one of the commoner causes of profuse haemorrhage from the rectum is diverticulitis. One case in our series required transfusions on three occasions before operation was undertaken. Pain can occur with both diseases, and the sigmoidoscopic examination often gives little help in clinical differentiation. However, a careful radiological examination is the most useful diagnostic method we possess.

It is doubtful that malignancy arises as a result of diverticulitis, but one must be careful to remember that carcinoma of the sigmoid may develop in an area of diverticulitis and be easily missed, if one does not bear in mind that these two diseases can co-exist. Diverticulitis seldom occurs in known cases of diverticulosis, but the patients are usually admitted to hospital in an acute phase without a previous diagnosis of diverticulosis.

The differential diagnosis is usually made on radiological examination. However, many cases are atypical and differentiation is impossible. In diverticulitis there are usually other diverticula present—not usually so in cancer. The lesion is longer in diverticulitis and the end cone-shaped, whereas in cancer there is usually a shelving edge. In diverticulitis the colon adjacent to the lesion is often spastic, and in cancer normal.

It has been called to our attention by Dr. Campbell Gardner that attacks of diverticulitis occur in almost the same way as those of ulcerative colitis. In some strange way it seems that a person who has had diverticulitis for many years without symptoms, may suddenly commence complaining of diarrhoea, bloody stools, pain in the lower abdomen and loss of weight. This usually follows some profound period of tension or fatigue, and appears to be the same mechanism as may occur in ulcerative colitis.

Therefore, although we concur with the conservative treatment usually advised for this complication, namely, low residue diet, liquid paraffin and possibly antibiotics, it is felt that an attack of diverticulitis can frequently be prevented or aborted by the easing of tension, either by change of environment or by some form of antispasmodic or sedative, providing perforation has not already occurred. In the great majority of cases the disease will subside.

The indications for operation are very similar to those for peptic ulcer:

1. Perforation
2. Stenosis
3. Haemorrhage
4. Uncertainty in the diagnosis or fear of carcinoma or a gastric ulcer.
5. Intractability — i.e., recurrent attacks.

Perhaps the most serious complication is that of perforation of the diverticulum into the general peritoneal cavity. The peritonitis which follows such an accident is about the worst type which we see at the present time, and is lethal if an operation is not done immediately.

What operation should be performed at such a time? There are a few surgeons who advocate immediate resection and anastomosis of the diseased portion of the colon. This, certainly, should not be undertaken except in the most expert hands, if at all. Very often one cannot actually find the hole in the colon. (Fig. 4).

Many operations have been suggested, and whereas one might like to exteriorize this diseased portion of the bowel, it is almost never possible to do so owing to the short mesentery and the degree of infection. Therefore, one must usually content oneself with a transverse colostomy and the placing of large drains down to the area involved. One further step may be added if the diverticulum perforates very low down, the removal of the coccyx and the drainage of the recto-rectal space from behind. Providing this condition is recognized and treated immediately, the patient will survive.

How long must the transverse colostomy be retained? Twenty years ago, it was generally conceded that six months was the shortest period of time. Later this interval was raised to two years. At the present time, however, most surgeons would refuse to close a colostomy, following the perforation of a diverticulum, until the diseased portion of the bowel is removed and an end-to-end anastomosis performed.

One might object to this method as so often diverticula occur throughout the entire length of the colon, but one must remember that by far the greater number of complications occur in the sigmoid or upper rectal area (98%), and once this portion is resected the patient usually remains well.

The second most common complication is the perforation of the diverticulum into the wall of the bowel, usually between the muscular coats and the serosa. This gives rise to a most extraordinary condition, the so-called "perisigmoiditis" which often resembles a carcinoma. In fact, so closely does it resemble the latter that on many occasions the surgeon has been sufficiently convinced that carcinoma was present to resect the bowel for this reason.

Actually, it is almost impossible to differentiate these diseases at operation. It is usually necessary to submit the tissue to a pathologist before one can be definite.

In the case of diverticulitis of the caecum, this is somewhat easier as the diverticulum almost always arises on the anterior-medial or the anterior-lateral side, but in the case of the sigmoid the total circumference of the bowel may be involved.

Stenosis. Stenosis rarely occurs, but can do so if a patient has sustained a number of attacks. If total obstruction has not developed, the stenosed portion of the bowel can be removed by a one-stage resection following adequate preparation, but if obstruction has developed it is far safer to proceed as with perforation using a transverse colostomy and subsequent resection and anastomosis.

Haemorrhage. This may be profuse as mentioned before although we have never had to attack this as an emergency. However, it has been reported.

The fear of carcinoma is one which is constantly present, and although, as I previously stated, I do not believe that diverticulitis is a precursor of malignancy, these two diseases do occur most frequently in the sigmoid region and one must be constantly on the watch that they do not occur coincidentally.

One further development may occur necessitating surgery—a fistula between the bowel and almost any other organ, and may give rise to symptoms which one may ascribe to disease of the bladder, uterus, or ovary, or even to the small intestine. Again, the same procedure is carried out, a proximal colostomy and resection of the diseased bowel and possibly of part of the other organ involved.

The question of prophylactic resection has been discussed recently, and it is the opinion of some that if a person has had one attack of diverticulitis and recovered, that he is prone to have another. To obviate this, resection of the diseased area is advocated in the interval stage, so that future infections will not occur that could well end in complications requiring the staged procedures or possibly with a fatal outcome.

We have no long-term follow-up of such cases, but, if mortality or morbidity is minimal, it probably should be used more extensively.

In conclusion I would like to emphasize that diverticulitis is probably commoner than we realize, and it may account for gastrointestinal or generalized disturbances not otherwise explained.

Figure 1
Royal Victoria Hospital
Diverticulitis of Colon — Surgically Treated
84 Cases — 1946 - 1956

	No. of Cases	Percent
Age Distribution:		
40 - 49 Years	15	18
50 - 59 Years	17	20
60 - 69 Years	37	44
70 - 79 Years	13	15.5
80 - 89 Years	2	2.5
Sex Distribution:		
Male	38	45
Female	46	55

Figure 2
Royal Victoria Hospital
Diverticulitis of Colon — Surgically Treated
84 Cases — 1946 - 1956

Clinical Signs and Symptoms:
Duration — Average 25 Months
Range — 24 Hours - 20 Years

	No. of Cases	Percent
1. Pain	78	93
crampy	53	63
l.l.q.	54	64
2. Constipation	35	42
3. Diarrhoea	37	44
4. Alternating constipation and diarrhoea	9	11
5. Bleeding	25	30
slight	21	25
severe	4	4.8
6. Palpable mass	44	52
7. Abdominal tenderness	65	77
localized l.l.q.	43	51
generalized	22	26

Figure 3
Royal Victoria Hospital
Diverticulitis of Colon — Surgically Treated
84 Cases — 1946 - 1956

Indications for Surgery:

	No. of Cases	Percent
I. Complications		
a) Perforation	26	31
1) generalized peritonitis	12	14.5
2) localized with abscess	14	15.5
b) Obstruction	19	22.5
c) Fistula	11	13
1) vesico-colic	3	4
2) vagino-colic	1	1.2
3) cutaneo-colic	4	5
4) entero-colic	3	5
d) Haemorrhage	4	5
II. Failure of Medical Management	15	18
III. Carcinoma Suspect	10	12
IV. Misdiagnosis	7	8.5

Figure 4
Royal Victoria Hospital
Diverticulitis of Colon — Surgically Treated
84 Cases — 1946 - 1956

Operative Procedure	No. of Cases	Complication Fistula	Complication Obst.	Mortality No.	Mortality %
1. One-stage resection	32	5	2	3	10
2. Three-stage resection	17	6	–	1	6
3. Two-stage colostomy	9	4	–	0	0
4. Palliative colostomy	15	–	–	3	20
5. Palliative drainage	5	–	–	2	40
6. Miscellaneous procedures	6	3	–	1	16
	84			10	12

Ophthalmology

Cataract Surgery — Past and Present

Howard Reed
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The Babylonian Era

The code of Hammurabi[1] is believed to have been written during the Babylonian empire about 2000 B.C. It is one of the oldest existing documents of ancient times.

Of interest to ophthalmologists is a statement of charges for operations upon the eye. If the sight of an eye was saved by an operation, the fee was ten shekels of silver in the case of a gentleman, five shekels for a poor man and two for an owned slave.

For an unsuccessful operation on a free man causing death or loss of the eye the surgeon paid the penalty of having his hand cut off. If a slave lost an eye as a result of an operation the penalty was to replace the slave by another.

Ten shekels was a liberal fee because five shekels was equivalent to the yearly rent of a good house, say about $12,000.00. So that ten shekels was probably equal to $24,000.00. Most of us would agree that $24,000.00 was a satisfactory fee for a satisfactory operation, but I wonder how long a modern ophthalmologist would be able to practice under the same conditions before an unsuccessful operation cost him a hand.

Some writers believe that the Babylonians couched for cataracts but the evidence is not conclusive. No Babylonian treatise on surgery is in existence.

The Great Susruta

It is claimed by some medical historians that Susruta[2], the ancient Hindu surgeon lived at least 1000 years B.C., but there is some doubt about the exact date. It is obvious from the old manuscripts that he was a most enlightened person. He performed anatomical dissections and taught surgical principles based upon them. He even practised a form of asepsis in that he recommended all his students to wash their hands before an operation, to keep their hair and beards short, and to change into a clean sweet-smelling robe before each operation.

Unfortunately the rise of Buddhism and the caste system of the Hindus forbade dissection and the shedding of blood and caused his knowledge and brilliant discoveries to become lost to mankind. It is only during the last century that it has been realized that Hindu Medicine was so far advanced in those far off times.

Susruta described cataract as an opacity of the lens and gave a detailed account of couching by depressing the lens into the vitreous.

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**Presented at the Medical History Section of the Winnipeg Medical Society on April 4th, 1957.

Celsus

It is not until the time of Celsus, who flourished in the reign of Augustus Caesar, that we have any evidence of a clear understanding of the nature of cataract. In the Hippocratic writings cataract is not described nor is there any mention of treatment such as couching. In Celsus, ophthalmology reached a peak that was never to be scaled again for centuries. It will be remembered that it was Celsus who first defined the signs of inflammation as rubor, calor, tumor and dolor. It is only in recent times that we have added the fifth sign, loss of function.

Celsus thought that the lens was situated in the centre of the eye (See Fig. 1). He believed that cataract was a humor which flowed along the optic nerve into the eye to fill the space between the pupil and the lens.

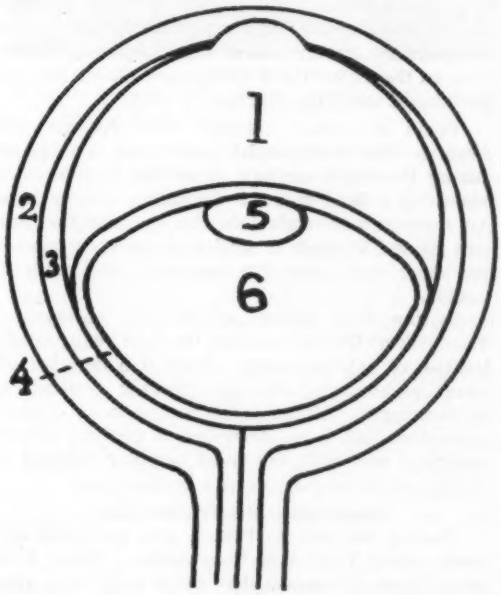

Figure 1

The anatomy of the eye as described by Celsus. 1. The cataract space. 2. The cornea. 3. The choroid. 4. The arachnoid. 5. The crystalline lens. 6. The vitreous. (Gordon, B. L., Arch. Ophth., 14: 777.)

He gave a description of the operation of couching[3] in these words:

"The patient must be set in a light place in a seat facing the light. The physician must sit opposite to the patient on a seat a little higher, an assistant behind taking hold of the patient's head and keeping it immovable. The operation must be performed on the left eye by the right hand, and on the right eye by the left hand. Then the needle sharp pointed, must be thrust in a straight direction, between the black of the eye

and the external angle opposite to the middle of the cataract. It must not be introduced with timidity. The needle must be turned upon the cataract, and gently moved up and down to work the cataract downward so that it may settle in the interior part. If it remain there the operation is completed. If it rises again, it must be cut with the same needle and divided into several pieces which are more easily lodged and give less obstruction. After this the needle must be brought out in a straight direction. The white of an egg spread upon wool must be applied and then the eye bound up."

A later Roman writer stated that the operation of couching followed the observation that a goat who was blind from cataract regained sight after running into a thorn which entered the cornea and dislodged the cataract from the pupil.

From the time of Celsus there is no evidence of any advance in the operation of couching until Daviel's work in the middle of the eighteenth century. Although Galen gave a better description of the anatomy and optics of the eye in his writings, he barely mentioned couching. From then on the authority of Celsus and Galen was not questioned until the eighteenth century.

There is some evidence that Ammar[4], an Arabian Ophthalmologist practising in Egypt during the tenth century, described a method of removing a fluid cataract through a hollow tube. An incision was made into the eye and the tube was passed through it whilst an assistant sucked the other end. But this operation died with its author.

In the 1854 edition of William Mackenzie's Textbook of Ophthalmology, the first really useful treatise of ophthalmology, there is a detailed account of couching and the various methods of performing it. Although the operation for cataract extraction had been described a century before, couching was still the most popular method of dealing with cataract even a century ago.

Couching at the Present Time

During the war in 1943, I was stationed at a town called Tabora in Tanganyika. When I arrived there I learned that there had been great excitement in the town the week before. A traveling Somali had been practising couching on all who would pay his fee and submit to the operation.

I arrived just one week too late to see an operation being performed but I was given a very lively account of his practice by the African orderlies who attended his sessions. Apparently the Somali performed the operation in the open and he loved an audience. The patient lay flat upon the ground with his arms folded upon his chest. An assistant knelt, holding the patient's head between his knees. The Somali operator sat astride the patient on his folded arms so that they could not be moved. A long needle resembling a hat pin was plunged straight into the patient's eye and then rotated through 90 degrees, back and out. In this way if the lens were a solid one it could be dislocated downwards, out of the pupillary area.

Although I was unable to see any of his operations, I saw several of his results a few weeks later. All ended as blind painful eyes. I saw no successful results; if there were any.

Methods of Couching

There are two methods of couching:

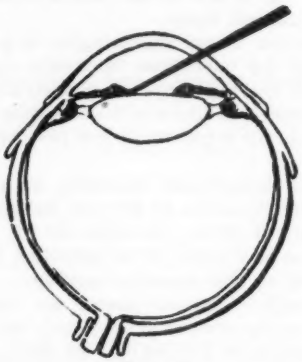

Figure 2
Couching by the anterior route. (Elliott, R. H., Indian Operation of Couching for Cataract, H. K. Lewis, London.)

1. The Anterior Route (Fig. 2)

In this operation the needle was passed into the eye through the cornea. It was passed in front of the iris and on through the pupil to the periphery of the lens. Then with the hole in the cornea acting as a fulcrum the needle handle was raised by the operator. This ruptured the supensory ligament and depressed the lens out of the pupil downwards into the vitreous.

2. The Posterior Route (Fig. 3)

In this method the operation was performed from behind the lens. The patient was asked to look towards the nose and the operator pierced the eye about 8 mms. behind the edge of the cornea. Usually the needle was made with a guard to prevent it from entering too far into the eye. A probe was then inserted through the hole made by the needle or knife. The probe was passed to the upper border of the cataractous lens and, with the wound in the sclera acting as a fulcrum, the probe handle was raised. This tore the suspensory ligament and depressed the lens downwards until it no longer filled the pupil.

It was then the custom to ask the patient to count fingers. If the operation had been performed satisfactorily the patient was able to do this and of course was greatly impressed.

A pad was at once applied to the eye. From time immemorial it has been the coucher's practice to warn the patient of the severe damage which might be done, if the pad were removed before the passing of one week. This gave the coucher time

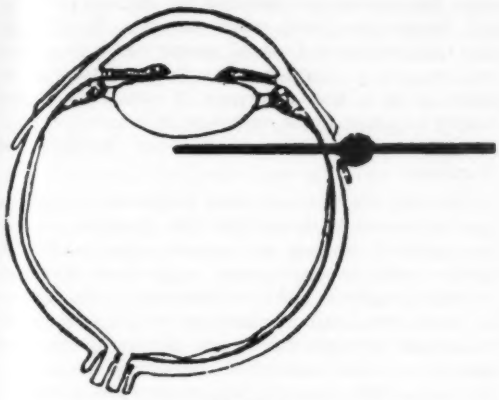

Figure 3
Couching by the posterior route. (Elliott, R. H., Indian Operation of Couching for Cataract, H. K. Lewis, London.)

to move on safely to the next village before unhappy complications occurred.

Results of Couching

Colonel Elliott[6] of the Indian Medical Service was interested in this problem and he analyzed the results of 780 cases which he saw in the Madras Ophthalmic Hospital.

Only 10% of the patients had vision of 20/60 or better with correcting lenses, and only 21% obtained a corrected vision of better than 20/200. Complications of glaucoma, iridocyclitis and infection claimed the eyes of the failures.

Now you will understand why it is that throughout the centuries the coucher has been a wanderer. He collected his fee before the operation, and patched the eye after the operation. He warned the patient of the dire consequences of removing the patch for at least a week and took care to move on to the next town before the patch was removed. He never received the patient's grateful thanks, but he also avoided the complaints of those he failed to cure (Fig. 4).

Cataract Extraction

The history of modern cataract extraction really begins about 1700 but in the previous century there had been hints that the dawn was breaking and that a new understanding of the nature of cataract was developing.

Fabricious al Aquapendente in 1600 was the first to show that the lens is in fact situated immediately behind the iris and that it is not separated by a cataract space.

In 1620 Pierre Borel wrote "The cataract is not a pellicle that is shoved to one side but it is the darkening of the crystalline itself which by means of the needle is thrust away from its place after the tearing apart of its suspensory fibres."

The importance of supplying convex lenses after a cataract operation was first appreciated by Benoist Daga de Valdes in 1623. It is recorded that Francois Quarre who lived during the middle

Figure 4
Itinerant coucher of this century working by the wayside in India. (Elliott, R. H., Indian Operation of Couching for Cataract, H. K. Lewis, London.)

of the 17th century was the first to teach publicly that cataract was in fact an opacity of crystalline lens. But there are no written records of his having published any such opinion.

The first extraction is believed to have been performed by Stephen Blankaart in 1668 who removed through a corneal incision a cataract which had dislocated forwards into the anterior chamber.

Despite these brief records of a few progressive minds, it seems that during the 17th century the operation of couching remained unchallenged, and it was generally believed that the crystalline lens occupied the centre of the eye, whilst a cataract was a humor which filled the space between the crystalline lens and the pupil. Galen was still the authority.

But about 1700 the truth of the nature of cataract began to be suspected. Maitre-Jan reported that he displaced a cataract into the anterior chamber by accident at a couching operation and that he noted it was a thick, rounded body. This prompted him to examine the eyes of patients whose cataracts he had couched. He then discovered that the lens and the cataract were the same. He said nothing about his discovery at the time because he feared the contempt of his colleagues.

In 1705, however, Brisseau, who was a young army surgeon, dissected the cataractous eye of a dead soldier and discovered that the cataract was not a humor in front of the lens but that it was the lens itself. His friends strongly advised him against publishing this discovery because it might

jeopardize his career. But he was not to be deterred and he recorded it in a paper which he presented to the Academie Royale des Sciences in Paris. This report encouraged Maitre-Jan to come forward and report somewhat belatedly his own findings.

In 1708, Petit reported the removal of a cataract from the anterior chamber, through an incision into the cornea and St. Ives performed the operation about the same time.

These reports led to a vigorous controversy. Petit, Brisseau and Maitre-Jan advanced the belief that the cataract was the opaque crystalline lens. They were bitterly opposed by Mery but when he searched for evidence to confound Brisseau, Mery himself became convinced of the truth of Brisseau's views and reported his change of beliefs.

The battle was soon over in the Academie of France but the truth took much longer to be accepted elsewhere. In London, Woolhouse, the King's oculist, remained a firm follower of Galen and believed that a cataract was a humor between the lens and the pupil until the day of his death in 1750.

This battle about the nature of cataract prepared the way for Daviel. The dust of this battle had hardly settled when Daviel reported his method of extraction of cataract and the battle was joined again. It persisted until well into the middle of the last century.

Jacques Daviel

Daviel[8] was born in a village some fifty miles away from Rouen and little is known of his early life. It is known, however, that an early age he was apprenticed to an uncle who was a well known surgeon in Rouen.

In 1713 at the age of 21, he was attached to the French army as a surgeon. Seven years later, plague broke out in southern France and many of the local doctors fled the plague-stricken area. Daviel, however, was one of the first to volunteer to go and fight the dreaded plague. Apparently he served most courageously whilst the plague was at its height and for this he was awarded the Cross of the Knight of Saint Roche by the King of France. Later he settled in practice in Marseilles and appointments and honours gradually came his way.

In 1738, he was appointed a demonstrator in anatomy and surgery and he practised couching on cadaveric eyes until he became an adept.

Ten years later he was an enthusiastic coucher because he wrote a paper in which he recommended opening the eye with a sharp instrument and then depressing the lens with a blunt probe. This method is still in use by the hereditary couchers of India, but I doubt if their knowledge stemmed from Daviel.

Daviel recorded that one day when he couched a dislocated cataractous lens, it floated forwards into the anterior chamber. He therefore proceeded to open the cornea and remove the cataract just as did Maitre-Jan forty years before. But Daviel had that necessary flash of genius which gave him the idea of a planned extraction. Although he tried it on a few occasions, it was some years before he adopted the operation of cataract extraction to the exclusion of the old operation of couching

He read his classical paper before the Academie des Sciences in Paris in 1752. His operation (Fig. 5) consisted of making an incision into the cornea below with an instrument very much like our modern keratome. This was enlarged with scissors on each side until the incision was a little more than half the circumference of the cornea. A spatula was inserted to hold the cornea away from the lens. The capsule was then opened with a needle and the spatula passed between the iris and lens to free adhesions. The lens was delivered by pressure. No iridectomy was performed. He mentioned that loss of vitreous occasionally occurred, but he did not consider that this was a serious complication.

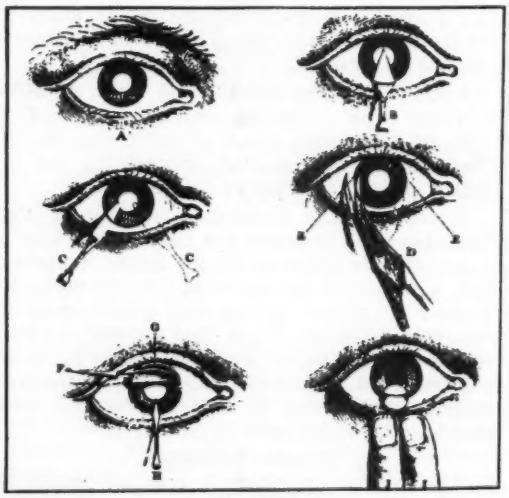

Figure 5

Copy of illustration in Daviel's original paper. (a) The cataract. (b) The incision with keratome. (c) Enlarging the incision with knife. (d) Enlarging with scissors. (f) Everting the corneal flap. (h) Cutting the lens capsule. (i) Expression of the lens with fingers.

At first this operation was enthusiastically acclaimed and many began to perform it, but its popularity gradually waned. But this is not surprising. We must remember that at this time there were no anaesthetics. No attempt was made at antisepsis or asepsis. Few men would be brave enough to attempt a cataract extraction upon an unanaesthetized patient for the first time. Moreover, 10% of the eyes were lost from sepsis.

In 1753, one year later, Samuel Sharp of Guy's Hospital, London, described the first cataract knife for making the incision for extracting the cataract.

It was not until 1784, that Pamard first suggested making the incision in the upper edge of the cornea. This procedure must have been very difficult at that time because the eye rotates upwards, when a patient is prevented from closing his eyes by holding the eyelids open. This is undoubtedly the reason why Daviel first described the incision at the lower border of the cornea.

It is interesting that even in 1854, Mackenzie, in his textbook of ophthalmology, described both the operations of extraction and couching but was quite lukewarm in his recommendations of the operation of extraction. This is readily understood when it is remembered that Lord Lister did not publicize his then revolutionary method of antisepsis until 1867. Moreover cocaine was not used as a local anaesthetic until 1884. Despite this it was in 1866 that Von Graefe introduced the operation of combined iridectomy and extracapsular extraction, and this operation was considered the best operation for cataract for nearly half a century.

Intracapsular Operation

A good result can be obtained by couching or extracapsular extraction only if the cataract is mature, or to use the lay expression, ripe. If the lens capsule contains much soft lens matter this may occupy the pupil after the operation, adhere to the posterior capsule of the lens and cause a fibrous mass to collect in the pupil which may obstruct vision as seriously as the original cataract. In the intracapsular extraction the cataractous lens is removed, with its capsule by rupturing the suspensory ligament of the lens.

This method of removing a cataract was first reported in 1903 by Colonel H. Smith[9] of the Indian Medical Service. He reported 6,500 intracapsular extractions to an unbelieving audience at the British Medical Association in Leeds. At first his reports were discounted but gradually ophthalmologists who went out to India to watch him became impressed by his methods.

About the end of the first war he toured America and Canada demonstrating his operation. Dr. E. J. Washington told me that he came to Winnipeg at the invitation of the late Dr. Harvey Smith and that he well remembers his visit. Col. Smith was a big stout pleasant man with a colourful personality. He wore no mask or gloves and smoked a cigar at intervals during the operation. Between puffs he placed it on the side of the instrument table. He did about a dozen extractions and was extremely dextrous. He made a simple incision into the cornea with a cataract knife and then by pressure expressed the lens very quickly and closed the eye.

It was a few decades before his recommendation of intracapsular extraction was accepted, but at the present time the intracapsular operation is performed almost to the exclusion of the extra capsular extraction.

The Battle of the Incision[10]

Since the last world war there has been a controversy as to the best method of making the incision for the operation. In England and on the continent of Europe, the cataract knife of Von Graefe is still the most popular instrument for making the opening into the eye. But in America and Canada, the incision is usually made with a keratome, and the wound is enlarged with scissors in a manner similar to that originally described by Daviel.

A few years ago I[11] performed a series of 180 cataract operations using each method of making the incision alternately so that I performed 90 operations by each method. I found that there was no significant difference in the visual results obtained by either method. This has been found by several other authors. I think it would be true to say that most ophthalmologists agree that the use of cataract knife or keratome for making the incision is entirely a matter of individual choice, experience and skill.

Closure of Incision

During the last two decades great changes have been made in methods of wound closure. Before the last war, most operators endeavoured to obtain a large conjunctival flap to cover the wound, but no sutures were inserted for the simple reason that at that time the needles and suture materials were too thick and clumsy to do this neatly.

Fortunately, we now have much more delicate needles and finer suture materials and during the last decade numerous methods of closing the wound have been introduced. At the present time some use 000000 chromic catgut, others use 000000 silk but the great majority of ophthalmologists are very careful to suture the wound firmly at the end of the operation. There is no doubt that wound suturing has greatly reduced the complications of cataract surgery and shortened the post-operative period of bed rest and stay in hospital[12, 13].

Results of Cataract Surgery

Accurate results of cataract surgery have been recorded only since the beginning of this century. If we consider that a successful result means a corrected visual acuity of 20/30 or 6/9 or better, it will give us some idea of the rapid strides in cataract surgery that have been made during the last half century.

In 1910, Rollet[14] described the surgical results of 1673 cataract extractions. He claimed that 43% of these were successful.

In 1921, Parker[15] described 1013 combined extracapsular operations performed in the way first described by Von Graefe, 60 years before. He claimed 33% successful results.

In 1936, however, Knapp[16], who had worked with Smith in India and was the first to popularize the intracapsular extraction began to claim 90% success using a modification of Smith's method. Smith used pressure entirely to express the lens,

but Knapp introduced the technique of grasping the anterior capsule of the lens with forceps and thus pulling the lens as well as pushing it out.

During the last decade most operators have been obtaining about 90% successful results following cataract extraction providing the eyes are otherwise healthy. You will see therefore that between the two great World Wars the successful results of cataract extraction rose from 40% to 90%. The table shows the results obtained by some contemporary ophthalmologists.

Visual Results of Modern Cataract Surgery

Post-operative vision 6/9 or better

1945	Hughes and Owens[17]	91.7%
1947	Knapp[16]	90.0%
1950	Kirby[15]	98.0%
1953	De Roetth[19]	89.7%
1953	Randolph and Eareckson[20]	88.0%
1955	Reed[21]	93.0%

Intraocular Plastic Lens

Following a successful cataract operation the use of the thick convex lenses is attended by a number of disabilities.

1. Objects are magnified and are one and one third as large as normal.

2. Vision is clear only through the centre of the lens.

3. Without spectacles the patient sees very poorly.

A few years ago, Ridley[22] described an operation which is as original as Daviel's introduction of cataract extraction. He described the substitution of a plastic lens for the opaque cataractous lens. This prevents all the disabilities of aphakic spectacles.

An extracapsular extraction is performed and the plastic lens is placed between the posterior capsule and the iris. Unfortunately the posterior capsule sometimes becomes opaque after the operation. This necessitates cutting the posterior capsule, rather like a posterior route couching operation. It is impossible to do an intracapsular extraction when inserting a plastic lens because without the support of the posterior capsule the plastic lens tends to dislocate downwards into the vitreous.

Because of these difficulties, Strampelli[23] of Italy has recently introduced various types of plastic lenses which may be fitted into the anterior chamber in front of the iris. They are held in position by spikes, which stick out of the equator of the lens into the angle between the iris and the cornea.

These methods, however, must be regarded as experimental. If time shows that they are safe, and that post-operative complications are no greater than those after the more usual forms of cataract extraction, the insertion of a plastic lens into the eye after extraction may well become commonplace to ophthalmologists of the next generation.

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Microbiology

Immunization — Fantasy and Reality

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I should like to begin with a quotation: "Yesterday's fantasy is to-day's fact and to-day's dreams will most certainly become to-morrow's realities." I think this applies to immunization as we look at the record, and hence the title you have heard.

The quotation is an encouraging statement, but it also serves to make one humble in that what we know and say now will surely be greatly modified in 10 or 20 years' time. This changing scene could be illustrated in so many spheres of medicine. Before 1940 for example there were only a few human blood types known, whereas today some 3 million different types can be determined and Lansteiner's prediction that the blood type will probably prove to be as individualistic as the fingerprint is on the way to being fulfilled. In my day as an undergraduate, epinephrine was the only known product of the adrenal gland while now 18 different products are known.

The same story is true for immunization, with new antigens and combinations of antigens appearing over the years. Perhaps one could start with the cave man who probably recognized that certain diseases, which "convulsed him with chills in the heat of summer or burned him with fevers in the dead of winter and changed his dreams into terrifying nightmares," occurred only once. There was nothing he could do about the once, however, except wishful thinking—if that. But the ancient Chinese and Hindus translated these thoughts into action in the practice of variolization (smallpox vaccination with smallpox crusts), which must certainly stand as the first immunization procedure.

Jennerian vaccination was the next step. If Jenner could know what has happened since his time, I am sure he would be greatly elated and at the same time cast down; in the first place, for example, because there has not been a case of smallpox in Canada since 1946 and in the second place because in a recent outbreak in Great Britain 2 nurses died of smallpox and in another a doctor died. None of the 3 had ever been vaccinated. To make matters worse still the doctor had a D.P.H. It is almost incredible that in Jenner's native land nurses and a doctor could die of smallpox in these days.

The hazard of smallpox is illustrated by the outbreak in France, in the summer of 1955. A French soldier returning to Brittany from Indo China sparked an epidemic of over 100 cases and several deaths. It is interesting in passing that the doctor placed in charge of the situation—Dr. Roger Nicolai—recently took the D.P.H. course in Toronto as a W.H.O. student. It was from him that I obtained these highlights of the epidemic.

We have been fortunate in this country for the past 10 years. What happened elsewhere could happen here, unless we use to the hilt the only defence we have against smallpox. You may remember that the only person to die of smallpox in the Canadian Armed Forces in World War II was an unvaccinated general. Vaccination in infancy carries a minimum of risk in contrast to the potential disaster awaiting the unvaccinated. Post-vaccinal encephalitis is almost unknown in Canada and generalized vaccinia is rare. One precaution might be mentioned; vaccination should be avoided in the presence of skin disease, especially eczema, or where eczema exists in another unvaccinated member of the family.

Which of the 3 methods of vaccination is used—short scratch, single puncture or multiple pressure—doesn't matter in my opinion. The aim is to get a take which will preferably leave a small scar. What does matter is revaccination. As the French outbreak demonstrates, it is often the previously vaccinated person with low immunity who develops a modified, unrecognized rash who acts as the spreader. For foreign travel, vaccination every 3 years is now the regulation. In addition, revaccination on school entrance and leaving and at any time of a threatened outbreak makes a reasonable schedule.

Revaccination carries the risk of a false sense of security. Old out-dated, dead vaccine elicits the "early" or "sensitivity" reaction which is often called the "reaction of immunity." But with dead vaccine an interpretation of immunity is erroneous. It is essential that fresh, potent vaccine be used for revaccination and the patient given every chance to develop a "vaccinoid" reaction or another primary. This is more vital here than on first vaccinations when, if nothing happens, it is obvious that the procedure should be repeated.

Furthermore, immunity may run out rather suddenly. I have seen a number of persons who gave repeated "sensitivity" reactions and then developed a vaccinoid within 6 to 12 months later. In my opinion a person should be vaccinated each time he goes abroad and the international regulation should be 1 year instead of 3.

One last point about vaccination. I doubt if there is a human who cannot be successfully vaccinated provided he has not had smallpox, cowpox or a previous successful vaccination. On one occasion a man of 64 years came to me, who had been vaccinated 13 times unsuccessfully. He had in fact been through the First World War. At any rate I had luck, and he developed a primary take on the first try. On another occasion, however, a

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colleague and I vaccinated a young lady 6 times before getting a take, so apparently it is not a case of "3 times and out" but of 6 or even 14 times and out. Such are the vagaries of biology which you and I encounter as physicians.

We must now pass on to diphtheria, a problem which has been vexing you and others very recently. It also vexed Napoleon who was the first to take a community interest in this disease which had killed his nephew and a grandchild of the Empress Josephine as well as making serious inroads among his troops. Napoleon offered a prize of 12,000 francs—real money in those days—to anyone proposing an effective control measure. The prize was never paid, since control was over 100 years away.

The great date, of course, was 1923 when Ramon added formalin to diphtheria toxin to prevent bacterial contamination and found that he no longer had toxin but a safe immunizing agent instead. With this happy mischance began the conquest of diphtheria by means of toxoid and the answer to Napoleon's dream.

This all began with the discovery of the diphtheria bacillus in 1883-4 and its toxin in 1888. This first toxin was very feeble. It required many cc. to kill one guinea pig, whereas today it is routine to produce toxins which kill 4-5000 guinea pigs per cc. Toxins of this high order of potency were first produced in the Connaught Medical Research Laboratories about 1938 after the introduction of a new medium. Workers elsewhere were unable to duplicate the results (and probably didn't believe them) even when provided with the same medium and culture. This led to some interesting research which found the difference to lie in the tap water used. As simple as tap water! Actually it was the iron content of the water which mattered. The hard Toronto tap water used was low in iron because of precipitation out with the calcium and it was finally shown that a concentration of iron of 0.1 p.p.m was optimal for toxin production and that at 0.6 p.p.m. free toxin production ceased.

I have mentioned that story as a matter of interest, to show the peculiar quirks of research and also because it is of practical importance. Such potent toxins made possible the provision of better toxoids. The first toxoids used in Canada were of the order of 5 Lf, whereas today they are issued at 25-40 Lf and greatly refined as well. It is possible to make toxoid of almost any strength, and I shall refer later to a 1200 Lf product.

When diphtheria was prevalent many persons had had a diphtheria experience, clinical or otherwise, and were easily immunized with low potency toxoids and immunity was maintained by natural stimuli through exposure. As cases and carriers alike became unusual, better toxoids and recall doses filled the gap.

A cold recital of immunization schedules would be neither novel nor interesting, but examination of the reasons and evidence on which they are based may be mentioned. Thinking in terms of the triple antigen, diphtheria and tetanus toxoids with pertussis vaccine, or DPT, it is almost universal to commence inoculation at 3 months of age. This time is chosen because of whooping cough deaths, many of which occur under 1 year of age. To start even earlier than 3 months, runs the risk of interference with active immunization by passive, maternal immunity if it is of a high level. This has been shown to occur in diphtheria and is known as "homologous interference." The titre of maternal antibodies drops quickly in the first few days of life and thereafter the half-life of such antibodies, to borrow a term from atomic science, is approximately every 30 days. By 3 months of age, then, this cannot be an important factor in many, and the primary course of 3 doses can be completed at 5 months.

The first recall done should be given early, within 6-12 months, for the sake of those whose antibody level may be low because of "homologous interference" or because they were reluctant antibody producers. On one occasion I gave a student 6 doses of toxoid before she became Schick negative, and I know of another who required 9 doses. Thirdly, antibody titres fall early and rapidly in some individuals.

The first recall dose raises the titre of all to much higher, protective levels. The first birthday is a good time for this dose; it is easy to remember and what better birthday present could one ask than something that might save his life.

As I shall show presently, further recall doses are required to maintain high titres, and it is accepted practice to give the 2nd recall about the 3rd birthday with a 4th on or just before school entrance at age 5 or 6. Some authorities omit the dose at age 3. By this time, i.e., age 5 or 6, all danger of death from whooping cough is past and for further recall doses at 4 to 5 year intervals the triple antigen D.P.T. is usually replaced by the combined diphtheria and tetanus toxoids.

All this may sound like a hard discipline but it is the price of security and seems much lighter when you reflect that a visit to the dentist every 6-12 months is an accepted routine.

We might now pause to look at a few lantern slides which illustrate the problem of antitoxin

Table I

Diphtheria Antitoxin Titres 10 to 18 Years After Primary Course of 3 Doses of Fluid Toxoid and 5 Weeks After a Recall Dose of 0.1 CC. (4 Lf) of Fluid Toxoid

Time	0.001 & >	0.003 & >	0.01 & >	0.1 & >	1 & >	10 & >	40 & >	≥40 <80	Total	Average Titre in Units
0	24	19	14	5	-	-	-	-	35	0.025
	69	54	40	14	-	-	-	-	100%	
5 weeks	35	35	34	33	29	13	3	2	35	9.8
	100	100	97	94	83	37	8.6	5.7	100%	

loss and the effect of the recall dose.

The first slide (Table I) shows the antitoxin titres of a group of 35 girls 10-18 years after their primary course. Almost 1/3 have no antitoxin and almost 1/2 less than the Schick test level of 0.004 units. It is easy to understand from this how previously toxoided persons could develop diphtheria.

This slide (Table I) illustrates two other points; first, that the ability to respond lasts many years and second that a very small dose will serve as a stimulus, in this case 0.1 cc. So immunity is easily restored.

TABLE II

Diphtheria Antitoxin Titres Before and After Various Recall Doses

Group	Stimulus	Lf	No. in Group	Average Antitoxin Titre in Units at 0	10 days to 5 weeks	3 years
1	Schick Toxin	0.001	9	0.007	0.071	0.022
2	Schick Control	0.02	7	0.007	0.35	0.041
3	Schick Toxin & Control	0.021	11	0.003	0.318	0.036
4	0.1 cc. Fluid Toxoid	4	23	0.007	1.7	0.49
5	1.0 cc. Dilute Toxoid	3	41	0.39	2.8	1.1
6	1.0 cc. Fluid Toxoid	40	38	0.28	8.6	0.82
7	0.4 cc. Dilute Toxoid	1	149	0.47	5.02	1.1

The second slide (Table II) shows the antitoxin response to various recall doses and the decline in titre that follows. Within 3 years some are approaching or at a non-protective level. Again, it illustrates how small the recall dose may be.

In the program outlined, the Schick test was not mentioned and we believe it has a very small place except for special, older groups such as nurses, medical students or in some older children with an unknown background. Otherwise it is better to devote time, energy and expense to giving recall doses. Infants and young children rarely react to diphtheria toxoid and full doses may be given up to and including the first school dose. Further recall doses at age 8 to 10 and over should be reduced to 0.1-0.2 cc. or else preceded by a reaction test with dilute toxoid in order to avoid sore arms and an occasional general reaction. A 0.1 or 0.2 cc. dose is widely used in school children without a prior reaction test and without difficulty.

Of recent years there has been some concern about diphtheria in adults. In the immediate post-war period in Europe there was a definite shift in the incidence to higher age groups. For instance, in one outbreak in Holland and another in Denmark 60% and 75% of cases, respectively, were over 15 years of age. This may well have been due to the abnormal circumstances prevailing and the consequent neglect of recall doses. In the U.S.A. a slight increase in morbidity rates in the over 20 age group has been reported in some States. More definite has been some increase in case fatality rates in those over 20. This could be accounted for by poorer reporting of cases in adults or by delayed diagnosis and treatment. If it were mainly due to a waning of antitoxic immunity there should be a more definite and general increase in diphtheria morbidity as well.

The recent Detroit outbreak is interesting in this respect. Of the 161 cases, 80% were in school children with the remainder scattered among preschool and older groups. This seems to constitute a fairly normal spread and no cause for alarm about adults.

Any campaign for immunization of adults would probably meet a relatively poor response; parents believe in many things for their children which they do not apply to themselves. Accessibility is another problem. A further drawback is the matter of reactions. These definitely increase with age in both frequency and severity. The great majority of reactors are among Schick negatives and these of course could and should be screened out. However, some of the Schick positives have a latent immunity and sensitivity which may be reawakened by the test or the first dose of toxoid. I encountered two such persons in one D.P.H. class. Both were Schick positive and control negative, had no difficulty with the first dose, but were confined to bed with severe local and general reactions after the second dose. Since that time I have made it a practice to repeat the Schick test with control in older persons before each dose of a series. Such solicitous attention is, of course, only possible on an individual basis.

Pregnant women might be regarded as suitable candidates for immunization both for their own sake and that of the offspring. Bearing in mind, however, the matter of homologous interference by high passive antitoxin levels it would appear that immunization during pregnancy would constitute a disservice to some infants by rendering their active immunization less effective. The practice has been frowned on in most quarters for this reason. Further, with the kind of program outlined, i.e., immunization in infancy, with recall doses during preschool and school life, there should be little diphtheria either in children or adults. A majority of the latter would retain protective titres for many years.

At the moment there does not appear to be any good reason for extending immunization on a mass scale to adults. The main problem still relates to children who have escaped immunization altogether or whose immunity has not been reinforced. Thus, in a recent outbreak in New Mexico, of 18 cases 14 had no prior immunization and none had a complete series. Diphtheria, like smallpox, will return to plague us whenever and

wherever immunization is slackened. One thinks of the saying "we have to run fast to stay where we are."

The second vexing problem is whooping cough. It is interesting to note that pertussis vaccine was first admitted to the list of New and Nonofficial Remedies of the American Medical Association in 1914 and removed from the list in 1931. During this period most vaccines were prepared from stock laboratory cultures and the results were irregular and unsatisfactory. By an ironic coincidence it was in 1931 that Leslie and Gardner demonstrated antigenic phases of H. pertussis and paved the way for the use of freshly isolated Phase I cultures in vaccine preparation, and soon after this Sauer, Kendrick and others produced convincing evidence of protective effect from such vaccines. Their reports have had recent confirmation from two large, thoroughly controlled studies by the British Medical Research Council. These studies showed a protection rate of about 80% with current vaccines and a lessening of severity in the remainder.

This is not ideal, nor as good as you and I would like, but it is very worthwhile. Active research still going on regarding selection of the best strains, methods of evaluating the vaccine and the possibility of a soluble antigen gives promise of better things to come.

The schedule of immunization with triple antigen (DPT) consisting of a dose at 3, 4 and 5 months with recall doses at approximately 1 and 3 years and on school entrance is the best that can be humanly devised at the present time. Immunization against pertussis is not commonly continued beyond this time as the risk of death from whooping cough is past and because older children may develop sharp reactions which might discourage the acceptance of other immunization procedures.

The third problem is tetanus and here the picture is quite different. There are only about a dozen deaths from tetanus per year in Canada but every injury, trivial and otherwise, is a potential hazard and the case fatality rate is high. In every injury a decision, with legal implications, must be made to give or withhold prophylactic antitoxin. If given there is the risk of serum sickness, occasional nerve palsies, or rarely of anaphylaxis. In addition it has been shown that in persons who react, the antitoxin is quickly broken down and the protection is short lived—in other words the half-life of the antitoxin in such persons is very brief. Also, antitoxin offers no protection against the effects of unrecognized injuries which constitute many of the portals of entry for clinical tetanus. Lastly, there is the ever present possibility that large numbers of our population may suddenly and simultaneously be subjected to penetrating and crushing injuries or burns by high explosive or atomic blasts.

Tetanus toxoid offers a solution to the dilemma. It was first produced and tested by Ramon after the discovery of diphtheria toxoid. Under his leadership it came to be used in the French Army, in combination with typhoid vaccine and diphtheria toxoid, long before it was adopted elsewhere. With the outbreak of war in 1939 it came into general use in the Armed Forces of all countries and tetanus ceased to be a war problem. This marks one of the great triumphs of military preventive medicine.

The use of triple antigen (DPT) for child immunization since about 1948 means that we are gradually building up a population protected against tetanus provided the immunity is maintained by recall doses at 4 to 5 year intervals. Then, as in the Armed Forces, a "wound booster" dose of toxoid can be given instead of antitoxin at time of injury.

This scheme works well as long as one is dealing with his regular patients. With casual patients or arrivals at an emergency ward the tetanus toxoid status would be unknown usually and antitoxin would be required.

It has been suggested that persons who have had tetanus toxoid should carry a card or a tag or be tattooed to indicate the fact just as many persons carry a record of their blood groups. No very practical solution has been proposed as yet.

Some large industries in Ontario have adopted the use of tetanus toxoid for their employees and if this were extended it would begin to take care of the adult population. At the Connaught Medical Research Laboratories most of the staff of about 600 have been immunized, and it is a great relief to me to be able to give toxoid instead of antitoxin for injuries

In practice all those not already protected by DPT or TABT can be immunized by tetanus toxoid alone or by the diphtheria-tetanus toxoid combination. In particular, I would urge that all allergic individuals in one's practice, the ones most likely to react to antitoxin, should be actively immunized. Just recently a general practitioner friend of mine had a patient go into anaphylactoid shock after the skin test dose of antitoxin. He has become enthusiastic about toxoid since then.

The ability to respond to a recall dose is retained for many years and perhaps indefinitely. This has been shown in individuals whose last previous dose was 10-15 years earlier. Where a long interval has elapsed, however, there is some evidence that the antitoxin response is slower and it is recommended that where it is more than 5 years since the last toxoid stimulus prophylactic antitoxin should be given in addition to the wound booster dose of toxoid in case the incubation period should be brief.

I would like to illustrate briefly some of these points about the use of tetanus toxoid in the following lantern slides (Table III). We have here a group of medical students, who had had TABT in the Armed Forces. Zero time represents 3 to

Table III
Distribution of Tetanus Antitoxin Titres Before and At Various Intervals After 10 Lf Recall Dose

Time	<0.01	0.01	>0.01<0.1	0.1	>0.1<1	1	>1<10	10	>10<100	>100	Totals	Geometric Mean of Antitoxin Titres
0	4		3	2	32	4	11		1		56	0.61
4 weeks					1		10	7	37	2	57	17.40
1 year				1	8	3	40	4	2		58	3.02
2 years			1	1	11	2	36		1		52	2.02
3 years			1		12	3	34	1			51	1.98

4 years after discharge and we find that 4 of the 56 have less than 0.01 unit of tetanus antitoxin. A few are in the range of doubtful protection between 0.01 and 0.1 unit. It is clear, then, as with diphtheria, that some lose their antitoxic protection and require periodic booster doses. The response is excellent, but again you can notice the shift back to lower titres over a three year period following a 1 cc. (10 Lf) recall dose.

Table IV
Distribution of Tetanus Antitoxin Titres Before and At Various Intervals After 1 Lf Recall Dose

Time	<0.01	0.01	>0.01<0.1	0.1	>0.1<1	1	>1<10	10	>10<100	>100	Totals	Geometric Mean of Antitoxin Titres
0	2	1	10	1	33	12	25				74	0.59
4 weeks	1			1	1	8	42	6	9		68	3.69
1 year	2			1	23	9	34	1	2		72	1.71
2 years	2			1	33	6	24	1	1		68	0.90
3 years	2				29	7	22	1	1		62	0.90

The next slide (Table IV) shows the same pattern in another section of the same class given 0.1 cc. (1 Lf).

The next slide (Table V) tells the story of a trial of tetanus toxoid given intranasally as a recall dose. Two drops of the 1200 Lf. toxoid referred to earlier were introduced into each nostril and in most instances the antitoxin response was quite marked. It is of interest that no reactions of consequence were encountered in spite of the inclusion of 2 persons who were extremely sensitive to regular toxoid subcutaneously. As a mark of confidence in the method I included my daughter in the experiment.

The special toxoid required is quite expensive and its administration is more time consuming than an injection so it will probably not become an accepted procedure. It does seem, however, to offer a means of maintaining immunity in the small percentage of persons who develop a sensitivity to the toxoid. At any rate, it was an interesting experiment.

Lastly, I must refer to poliomyelitis or Salk vaccine, though I shall do so briefly. You may remember that earlier workers strove to solve the problem of a vaccine. In the U.S.A. about 1935, two vaccines made from the central nervous system of infected monkeys were tried in children with disastrous results. The quest went on however,

Table V
Tetanus Antitoxin Titres Before and 14 Days After Intranasal Tetanus Toxoid

Group	Person	Antitoxin Units Per Ml. of Serum		Years Since Last Stimulus	Reaction
		Before	After		
I	J.P.	<0.01	>.3<10	9	Nil
	E.O.B.		>3	8	Nil
	W.J.H.		>1<3	13	Nil
	E.M.		>0.01<0.1	6	Nil
II	J.S.M.	>0.01<0.1	10	6	Slight headache
	K.O.		>3<10	4	Nil
	D.M.		>1<3	8	Nil
	J.H.		>1<3	9	Nil
	M.T.		>1<3	2	Nil
	G.C.F.		>1<3	2	Nil
	M.E.B.		>0.1<1	10	Coryza - 1 week
	A.T.		>0.1<1	7	Nil
	F.M.M.1		>0.01<0.1	7	Nil
	F.M.M.2		>1<3		Nil
III	J.E.A.	>0.1<1	>10	9	Nil
	F.D.M.		>10	4	Nil
	A.C.J.		>10	8	Nil
	K.E.O.		>10	-	Nil
	F.O.W.		>10	3	Nil
	E.S.		10	9	Itching of eyes
	J.M.		>3<10	8	Nil
	M.C.		>3<10	2	Nil
	O.L.M.		>1<3	6	Slight headache
	E.S.		>1<3	2	Nil
	J.S.F.		>1<3	1	Nil
	G.O.M.		>1<3	-	Nil
	G.E.		>1<3	6	Nil
	G.T.		1	6	Nil
	D.T.F.		>0.1<1	2	Nil
	H.B.		>0.1<1	2	Nil
	J.E.H.		>0.1<1	1	"Flu"
IV	W.H.	1	>1<3	6	Nil
	F.H.		>1<3	6	Nil
V	B.D.H.	>1<3	>10	1	Nil
	W.B.H.		>10	1	Nil
	G.M.M.		>3<10	1	Nil
	E.V.		3	6	Nil
	F.T.		>1<3	2	Nil
	G.Mc.		>1<3	4	Nil
W	E.J.M.	>3<10	>10<20	2	Nil

and a breakthrough came in 1949 when Enders and associates grew the virus in tissue culture. With these new methods it was soon demonstrated that there were 3 immunological types of virus and further, that a viraemia occurred during the incubation period of the disease. This suggested that circulating antibodies might protect the C.N.S. from invasion and the use of gamma globulin lent support to this concept.

In 1952 Salk published a report on antibody production in monkeys and in 1953 in children following inoculation with formalin treated tissue culture fluids. Methods for mass production of virus in monkey kidney in a special synthetic tissue culture fluid, 199, were soon devised and formolized vaccine was produced on a large scale.

Let us look at the situation today. First, safety. Several million doses have been given in Canada without misadventure. That is a very large safety test. With present methods of checking there should be no problem. There is of course no such thing as absolute safety—5 grains of aspirin have been known to kill and even gamma globulin has given reactions on rare occasions.

Next, efficacy. The famous Francis report on the large 1954 trial gave strong evidence of protection and there has been nothing published since to contradict this belief. Figures for 1956 for Ontario show 5 paralytic cases in some 800,000 children who had received 2 or more doses and 71 paralytic cases in some 900,000 children who had had no vaccine or 1 dose only. The difference is, obviously, very striking.

The dosage schedule is well known—two 1 cc. doses a month apart with the 3rd dose 7 months or more later. A common question is this—is it necessary to start over again if several months, or a year, have elapsed since the first dose was given? Dr. Roper Cadham and I were able to ask Dr. Salk in person about this last November and his answer was no. Provided the first dose is adequate, the ability to respond is established. This agrees with my own experience with toxoids. It would of course "make assurance doubly sure" to start again.

Will recall doses be necessary? There hasn't been time to establish this point as yet, but one would expect on general immunologic principles that they will be needed unless natural infections continue and serve as booster doses.

Another practical point is that the body responds vigorously to antigens it has experienced before and a new antigen given at the same time tends to lose out. This is known as "competition of antigens" or "heterologous interference" or "crowding out effect." It works in this way. In animals, which have had TAB and later are given TABT the response to the tetanus toxoid is delayed and diminished in contrast to the response in a group of normal animals given TABT. In children it has been shown that where some active immunity to diphtheria exists and DPT is given the response to the pertussis and tetanus antigens is less pronounced than in children without diphtheria immunity. This is the "crowding-out" effect and it simply means that the antibody producing cells are so busy responding to the antigen they have experienced before that they are unable to respond normally to new antigens. The response to a recall dose is normal, however, and the lag is overcome. In my opinion, then, the first two doses of Salk vaccine should not be given at the same time as a recall dose of another antigen or antigens.

Salk vaccine adds 3 more injections to the immunization program at present. It may become possible to combine it with DPT, for example, giving DPTP, but it is not as simple as it sounds. In the first place it is quite an achievement to get 3 or 4 products into the same volume as any one and it is vital to avoid interference with antigenicity of any one by the presence of the others or through chemicals or preservatives present. You may well wonder how many antigens can be given at the same time and still obtain satisfactory antibody response. In animals one investigator found a response to 34 of 35 different substances. On the other hand as few as two antigens have been shown to interfere where one is much superior to the other.

There are problems then to be overcome and long-term tests required before an effective, balanced, DPTP combined antigen will be forthcoming. Past experience however, gives some ground for optimism. The importance of combined antigens becomes more and more obvious as new viruses continue to be discovered—ECHO, ADENO, ACP, etc., some of which are likely to be used as immunizing agents. There must be a limit to a patient's patience and tolerance, and in time, unless further combinations are achieved, it might become a matter of choosing which antigens to give.

Brief reference should be made to the search that is going on for a living, attenuated, oral vaccine against poliomyelitis. The aim is to produce stable non-pathogenic strains which are still antigenic and will not revert to virulence in the body. Both egg passage and tissue culture passage are being explored with some success.

A number of human tests have been carried out, but there are hurdles still to surmount. Other things being equal live vaccines are superior to dead and the advantages of oral over parenteral administration are obvious. Again, there is room for optimism.

Now, partly in order to live up to my title, I would point out that in animals and man immunization against cancer is receiving experimental trial. That surely seems to lie in the realm of fantasy but it just could, perhaps, become tomorrow's reality.

In the meantime, and in summary, there is cause for gratification in the dreams that have come true through immunization against smallpox, diphtheria, pertussis, tetanus and now poliomyelitis. Others could have been mentioned such as typhus and yellow fever had time permitted. There is no glamour to immunization. It is impersonal in that it is impossible to say that you or I, members of our families, or any specific person, is alive today because of immunization. But we do know that countless children have been saved to their families and citizens to their nations through this means.

I should like to finish as I began with a quotation, or rather 2 quotations. The first is the inscription on an English tombstone of 500 years ago; it reads as follows:

"When pictures look alive with movements free,
When ships like fishes swim beneath the sea,
When man, outstripping birds, shall scan the sky,
Then half the world deep drenched in blood
shall lie."

That was fantasy which has become reality but lest we end on a gloomy note the second quotation is this:

"Time was when an imaginative predicter was labelled as an impractical visionary — now he is called a long range planner."

Much long range planning has gone into the problems of immunization.

Abstracts from the Literature

Choice of Therapy for Peripheral Arteriosclerosis. Edwards, E. A., New Eng. J. of Med., 256: 875-880, May, 1957.

The availability of surgical treatment for peripheral arteriosclerosis necessitates accurate appraisal of disease in the patient, and evaluation of the possible results of therapy.

The disease is essentially a disseminated process but may be divided into those having segmental involvement of a limb artery, with good prognosis, and those with widespread limb and visceral disease having poor prognosis. Segmental occlusion tends to occur in younger patients, and gives rise to claudication, less often to gangrene. Acral ischaemia is due to diffuse disease of terminal vessels and more frequently precedes gangrene.

The level of arterial occlusion is located by studying the level of claudication, palpation and oscillometry, auscultation and arteriography. Aortography carries some risk, and, if possible, bilateral femoral arteriography should be substituted.

Important complications of atherosclerosis are arterial thrombosis and aneurysm. In diabetic patients infection is of prime importance. In recent years it has been the trend to extirpate aneurysms when they are diagnosed, rather than await development of pain, rupture, or thrombosis.

Medical treatment is directed at treatment of concurrent disease, prevention of injury, anticoagulation for thrombosis, improving the status of the heart, and correcting anaemia or polycythaemia. No effective vasodilator drugs have been found for arteriosclerosis.

The author stresses lumbar sympathectomy as the most effective way to increase collateral flow, although results are usually poor in diabetics. It is indicated in young patients, in older patients with rapid deterioration of peripheral circulation but with possible reversal of ischaemia, patients who have lost a limb, patients having cutaneous necrosis or arterial thrombosis. Sympathectomy is contraindicated in deep bone necrosis proximal to the toes, large cutaneous lesions, deep infection and extensive thrombosis.

Arterial reconstruction brings more blood to a part than does sympathectomy, but may only partly relieve claudication, and must be performed on a large artery with localized occlusion. Subsequent closure of grafts may occur. Disabling claudication is a frequent indication and aneurysm a certain indication for graft replacement.

In treatment of extensive necrosis, conservative amputations may be attempted if there is evidence of good circulation at the site of surgery.

V. M. Storrie.

♦

Radiation Reactions in the Heart. Whitfield, A. G. W. and Kunkler, P.B., Brit. Heart Journal, 19: 53-58, Jan., 1957.

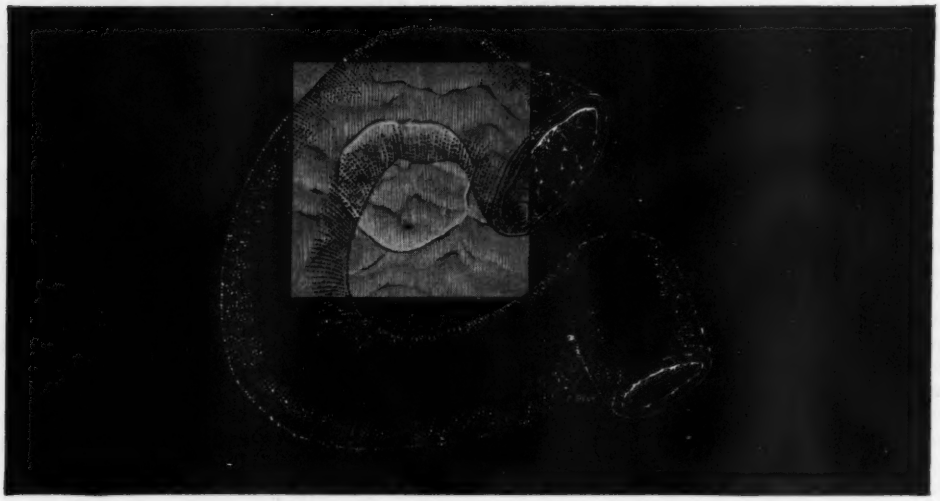
The authors briefly review the reports in the literature concerning radiation damage to cardiac tissue in humans, and in animal studies. Four cases are reported wherein the patients received radiotherapy to the thorax for malignant neoplastic disease, and in whom the heart was clinically and electrocardiographically normal at the commencement of treatment. From two to five weeks later all cases showed inversion of T waves in various ECG leads, particularly in the chest leads. In three of these cases the changes were asymptomatic and returned to normal one to two months later. The fourth case died suddenly, for which no cause was found at autopsy.

There seems no doubt that these changes were directly due to radiation. In experimental animals radiation has been found to damage myocardial muscle, and lead to eventual thickening of walls of blood vessels. In the above patients the ECG changes parallelled the appearance of skin erythema and probably were dependent upon myocardial reaction rather than arterial damage.

It is suggested that patients receiving heavy doses of radiation affecting the myocardium be followed by ECG's which may define limits of cardiac tolerance.

V. M. Storrie.

RELIEVES THE GNAWING ACHE



Pro-Banthine® provides rapid control of pain in peptic ulcer

In a two-year study[1] by Lichstein and co-workers, documented by intensive personal observation and by follow-up studies, Pro-Banthine (brand of propantheline bromide) often brought immediate relief of ulcer pain. Patients (11 per cent) who did not respond satisfactorily to Pro-Banthine therapy had "anxiety manifestations of psychoneurotic proportions."

In addition to frequent immediate symptomatic relief, Pro-Banthine reduces gastrointestinal motility and diminishes the secretion and acidity of gastric juice, all-important factors in the generation and aggravation of peptic ulcer.

These actions of Pro-Banthine and its demonstrated effectiveness in accelerating ulcer healing[2-5] mark the drug as a most valuable adjunct in the treatment of peptic ulcer.

The suggested initial dosage is one 15-mg. tablet with meals and two tablets at bedtime. An increased dosage may be necessary for severe manifestations and then two or more tablets four times a day may be prescribed.

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ANNUAL CONVENTION

Manitoba Medical Association

(Canadian Medical Association, Manitoba Division)

Winnipeg, October 15, 16, 17, 18

Tentative Program

Scientific and Business Sessions will be held in the

Royal Alexandra Hotel

Guest Speakers

Dr. H. B. Atlee, Head of Department of Obstetrics and Gynecology, Dalhousie University, Halifax.

Dr. J. W. Gerrard, Professor of Paediatrics, University of Saskatchewan, Saskatoon.

Dr. J. A. L. Gilbert, Medical Arts Building, Edmonton, Alberta.

Dr. R. C. Harrison, Asst. Prof. Clinical Research, University of Alberta, Edmonton, Alberta.

Dr. M. A. R. Young, President, Canadian Medical Association, Lamont, Alberta.

Mr. L. W. Holmes, Assistant Secretary, Public Relations, Canadian Medical Association, Toronto.

Tuesday, October 15th

Morning

9.30 Medical Health Officers, Section of the Manitoba Public Health Association.

Afternoon

2.00 Executive Committee.

5.00 Manitoba Medical Association.

Evening

6.00 President's Dinner to Retiring Executive.

8.15 Annual Meeting Business Session—Members only.

Report of the Nominating Committee.

Presidential Address.

Wednesday, October 16th

Crystal Ballroom

Morning

8.15 Registration.

8.30 Film: "The Sulphonylureas in the Treatment of Diabetes" (Hoescht Ltd.).

8.55 Opening of the Scientific Session, Dr. J. E. Hudson, President.

9.00 Acne and Acne Scars. Dr. S. Berger.

9.30 Gall Bladder Disease, Dr. A. C. Abbott.

10.00 New Wine in Old Jugs, Dr. S. Vaisrub. Dr. D. J. Hastings, Chairman.

10.30 Intermission: Visit the Scientific and Technical Exhibits.

11.00 Fashions in the Treatment of Carcinoma of the Breast, Dr. R. C. Harrison. Dr. A. Klass, Chairman.

Noon

12.00 Luncheon. Guest Speaker: Dr. M. A. R. Young, President, Canadian Medical Association.

Afternoon

2.00 The Use of Sulphonylurea Compounds In Diabetes, Dr. J. A. L. Gilbert. Dr. A. B. Houston, Chairman.

3.00 Intermission: Visit the Scientific and Technical Exhibits.

3.15 Laboratory Medicine.

Aids in the Investigation of Viral Infections, Dr. J. C. Wilt.

Place of Cytology in the Diagnosis of Cancer, Dr. D. W. Penner.

Clinical Uses of the Newer Enzymes, Dr. M. C. Blanchaer.

Dr. L. Israels, Chairman.

Evening

6.30 Sectional Meetings.

8.30 Annual Meeting Business Session (Continued).

Thursday, October 17th

Crystal Ballroom

Morning

8.15 Registration.

8.30 Film: "On Impact,"
(Ford Motor Company of Canada).

9.00 The Treatment of Chronic Ulcerative Colitis, Dr. A. G. Rogers.

9.30 Multiple Injuries, Their Assessment and Management, Dr. J. S. McGoey.

10.00 Oesophageal Hiatus Hernia, Dr. C. M. Burns.
Dr. K. R. Trueman, Chairman.

10.30 Intermission: Visit the Scientific and Technical Exhibits.

11.00 Pre-diabetic Syndromes, Dr. J. A. L. Gilbert.
Dr. S. Israels, Chairman.

Noon

12.00 Luncheon.
Guest Speaker: Dr. H. B. Atlee, Halifax.
Cancer of the Pelvic Organs and the G. P.
Introduced by Dr. Elinor Black.

Afternoon

2.00 Limitations in the Surgical Treatment of Duodenal Ulcer, Dr. R. C. Harrison.
Dr. C. W. Clark, Chairman.

3.00 Intermission: Visit the Scientific and Technical Exhibits.

3.15 Annual Meeting Business Session (Concluded).

Evening

6.30 Reception.

7.15 Dinner.

9.00 Dance.

Friday, October 18th

Colonial Room

Morning

8.15 Registration.

8.30 Film: "Resuscitation for Cardiac Arrest," Claud S. Beck, M.D.

9.00 Moles and Melanomata, Dr W. Maclean.

9.30 Recent British Practice in Obstetrics and Gynaecology, Dr. Jean McFarlane.

10.00 Impending Myocardial Infarction, Recognition and Treatment,
Dr. R. E. Beamish.
Dr. J. Hollenberg, Chairman.

10.30 Intermission: Visit the Scientific and Technical Exhibits.

11.00 The First Ten Minutes of a Baby,
Dr. H. B. Atlee.
Dr. B. D. Best, Chairman.

Afternoon

2.00 Care of the Unborn Child,
Dr. J. W. Gerrard.
Dr. H. Medovy, Chairman.

3.00 Pediatric Panel.
Acute Diarrhoea, Dr. F. Coodin.
Chronic Diarrhoeal Disorders in Infants and Children, Dr. J. W. Gerrard.
Electrolyte Problems in Diarrhoea,
Dr. S. Israels.
Dr. H. Medovy, Chairman.

Ladies' Program

Under the Chairmanship of Mrs. J. E. Hudson, the Ladies' Committee is presenting a program that will be of interest to all ladies attending. Tea: Wednesday afternoon, Dinner and Dance: Thursday evening, Coffee Party: Friday morning. Other social events will be announced as arrangements are completed. The Ladies' Registration Booth will be situated at the entrance to the Banquet Hall.

Editorial

S. Vaisrub, M.D., M.R.C.P. (Lond.), F.R.C.P. (C.), F.A.C.P., Editor

Water, Water, Everywhere . . .

Writing for medical journals is what is known colloquially as a "soft" job. It obviously requires no physical effort beyond the rhythmic movement of the right index finger. It demands no elaborate equipment — a pencil stub, a sheet of paper and a couch to lie on being all that is required. Nor is mental effort a sine qua non, for the main problem and the haunting worry of writers for non-medical professional publications — that of finding a subject to write about, is not existent for the medical scribe. Unlike his less fortunate colleague, whose range of topics is sadly limited by the narrow bounds of his profession or craft, the medical writer is foot loose and fancy-free. His is a free choice from an unlimited number of topics. He can write about anything that comes to his mind, for everything in the world about him bears a relation to medicine. Everything is grist for his mill.

The medical writer has no need to travel far in search of material. All he has to do is to look at familiar objects surrounding him in his home. Each one of them carries a medical message. The food laden table in the dining room speaks of the countless diets and dietary fads from the ancient bizarre regimens to the current low fat diet for atherosclerosis. The medicine cabinet in the bathroom wall whispers dire warnings of accidental death by poisoning. The cozy arm chair stirs up interest in the arm chair treatment of myocardial infarction. The bed, of course, is a "natural" for a dissertation on the bedside manner. Even the humble plumbing carries medical implications.

Should the medical penman decide to step out of the house — not before his article on claustrophobia has been completed, of course — he will find an even richer source of topical material in the wide outdoors. The roaring plane overhead is a loud reminder of the progress in the aviation medicine; the honk of the automobile horn is a clarion call for prevention of traffic accidents; the smoke of factory chimneys is a cry against air pollution; while the smoke of his own cigarette spells out an ominous warning against carcinoma of the lung.

Having quickly butted his cigarette, the gentleman of the medical press may now decide to take a leisurely stroll through the park. Here the rich flora offers a tempting variety of medical subjects. The flowering rose evokes memories of Rosa Anglica, Rosa Gallica, and the Rosegarten—all full of medieval medical lore. The lily of the valley recalls the Lilium Medicinae. The male fern, the mandragora leaf and the whole exotic world of ancient and medieval herbalism — the Hortus Medicinae come alive again. The poison oak and poison ivy lurk in dark corners — a challenge to modern therapeutics.

Even more rewarding than the study of the flora of the park is the observation of its fauna. Almost every animal, tame or wild, is a carrier of some dread disease transmissible to humans. Tuleremia, plague, the rickettsias, rabies, cat scratch fever and a host of others come readily to the mind of the roaming medical writer as his eye catches sight of their living reservoirs. Nor do the symbolic connotations of some of the members of the animal kingdom escape him. "Working like a horse," "a dog's life, "a rat race" — are not totally without meaning to the medical pen. Even the duck in the pond, a source of gentle amusement to the onlookers, is to the pondering servant of the medical muse but a sad reminder of the fact that his profession is now more than ever a "sitting duck" a ready target for the politicians to shoot at. This sad thought is not dispelled by the sight of a playful bear and the thought of his bear hug. From the bearish to the bullish is but a step, and the bull has provided medicine not only with the cor bovinum, but also with implications that could only be elaborated upon at the risk of violating the Obscene Publication Act.

It would appear from the foregoing remarks that medical topics are in abundance. Yet, despite the plethora of available material, our Annual Conventions and the Manitoba Medical Review find themselves on occasion short of papers for presentation or publication. Why this is so, is a puzzling question. Water, water everywhere and not a drop to drink.

Ed.

The Annual Convention

The reader who has taken the pains of glancing through the preceding (surmounting) editorial will find it hard to disagree with its main thesis — that the medical writer is a free lance, free to write on any subject he may choose. The reader should not be left, however, with the naive impression that the medical editor belongs in the same category. Nothing could be farther from the truth. The medical editor is often deprived of the blessing of free choice, being limited to certain topics by the demands of the hour.

The demand of the hour now is clearly the Annual Meeting of the Manitoba Medical Association. It is the medical event of the year, and the editor would be sadly amiss in his duty if he failed to make the expected comment. This is not an unpleasant task, for it concerns itself with a very pleasant event, one which is close to the

heart of every medical practitioner in this province. The difficulty lies in trying to find and publicize features which are new and peculiar to this meeting, as contrasted with the forty-eight preceding annual conventions, thus avoiding repetition of what has been said forty-eight times before. Not that there is anything wrong with repetition. If it disclosed that the scientific program bristles with new speakers, new topics, and new ideas, it may be a repetition of what has been said last year, but the "new' of to-day is not the "new" of yesterday. It is distinctly "newer." If it is stated that the social program is brighter and gayer than ever before, it may again savor of repetition, but, then, with new Liquor Laws in effect, quiem sabe? If it is mentioned that the business meetings promise to be more exciting than ever, it may again smack of deja vue, but is nonetheless true. The discussion of the National Health Bill and its implications will no doubt give rise to fireworks, the like of which has not been seen for some time.

Of course, it is deductible!

Ed.

Professional Policy Committee

The Executive, The Professional Policy Committee, and Section Eleven of The Report of the Special Commission of The Manitoba Medical Association.

One of the main items of business of the Annual Meeting of the Association in 1956 was its consideration of the Report of the Special Commission. This year the membership will be entitled to know what action has been taken in the fulfilment of their wishes as expressed formally at last year's Annual Meeting. The purpose of this editorial is to review the history of the past year, with particular reference to Section Eleven of the Commission's report and the amendment known as Section 11A.

It will be remembered that a Special Commission was called into being at the Annual Meeting of the Association in October, 1955, and by December of that year was authorized by the Executive to commence its work, under the chairmanship of Dr. Paul L'Heureux. The formation of such a commission had been requested by the General Practitioners' Association of Manitoba, although its terms of reference were much broadened as compared to those originally suggested. The final terms allowed for a very complete inquiry into the relationships of the practising profession with the Manitoba Medical Service, including its fee schedules, the differential fee schedule, and all matters pertaining to them.

The Report of the Commission was completed in due course, and was circulated to the Profession in advance of the 1956 Annual Meeting. It is unnecessary at this time to make more than passing reference to the immense amount of painstaking work done by the Commission. In summary nineteen sections were set forth as recapitulation of the full text of the findings.

In recognition of the importance of this work the organizers of the 1956 Annual Meeting set aside an extra evening business session for its discussion. The first evening was used to review the report, and the second for a more formal discussion. The Meeting was convened into a Committee of the Whole for the discussions, in order to allow the most full and complete exposition of all the sections. Thus every possible means was made available for the membership to deal with it fully and intelligently. Yet, in the end, the Annual Meeting failed to make its wishes unequivocally clear, at least in a formal and legal sense. Thus the controversy over Section 11, which was in evidence at the meeting, was allowed to follow on into 1957, and was not finally resolved until June.

During the debate of the Committee of the Whole, each section in the summary was considered individually and in order. Certain alterations were made. Finally, at the end of the discussions, the following motions were made, and carried: (1) "That the Committee of the Whole, having studied the Report of the Special Commission, and having changed and amended it as recorded in the proceedings, the Executive Committee be now instructed to take whatever action is necessary to put the Report into effect." (2) "That the Committee of the Whole should rise and report." Then followed the motion of the chairman of the Special Commission, Dr. L'Heureux, "That the report of the Special Commission be adopted." This was carried by the Annual Meeting. Since the Commission's report comprised one of three sections of the annual report of the Executive, the motion for adoption of this finalized the proceedings.

At this point, it seemed that controversy was ended. However, the adoption of the Report in itself left room for doubt as to what was in fact intended. Several interpretations were argued at some length in Executive meetings subsequently, and thus it was that action was deferred on some important points, and in particular, with regard to Section 11.

During the debate of the Committee of the Whole, as previously noted, the Commission's recommendations were discussed and voted upon in turn. Sections 1, 3, 5, 6, 9, and 12 to 19 inclusive were carried with little opposition. Section 4 was defeated, and Sections 7 and 8 were altered by changes in wording but not in meaning. Only with regard to Sections 2 and 11 was there any real controversy, and only these are our present concern.

Section 2 was amended as follows: "That Chapter One, Section B, Sub-section B paragraphs 1 (a), (b), (c), and (d), be deleted and the following be substituted in lieu thereof: That the Professional

Policy Committee shall be composed of such numbers of qualified general practitioners and specialists as the Executive of the M.M.A. decides, provided always that fifty per centum of the said Professional Policy Committee shall be appointed by the General Practitioners' Association and the remaining fifty per centum shall be appointed by the specialists' blocs. Alternates shall be available. The Chairman shall be in addition to the above members, and shall be appointed by the Executive of the M.M.A. and shall be mutually acceptable to all members of the Professional Policy Committee." This amendment was brought forward by the General Practitioners' Association, because it felt the scheme of representation in the original report did not do it justice, and in any event there were many who did not believe that a committee of eighteen members as originally suggested, would be as effective as a smaller one. More importantly, the paragraphs dealing with the P.P.C.'s duties were adopted without change. These state that the P.P.C. is to act as a fee and fee-revision committee, and that proposed changes in matters affecting the Manitoba Medical Service should be referred to it for study and recommendations before the M.M.A. or its Executive passed these recommendations along to M.M.S. It is evident then, that having accepted Section 2, all matters of concern to M.M.S. must be referred to the P.P.C. It is evident that the composition of the P.P.C. is vastly different from that envisaged by the Special Commission. One such matter, it might be held, would be Section 11, and this forms the basis of the claim that the Executive could not take measures to implement Section 11 without prior approval from the Professional Policy Committee.

Section 11 was passed in its original form, "Assistant's fees should be paid out of the general fund of the M.M.S. and not taken from the surgeon's fee. The fee should be based on the value of the services rendered." It was not, however passed without much discussion, nor was it passed unanimously. The main opposition came from the General Practitioners' Association. The surgeons, naturally were in favor. A good deal of discussion centered around the estimated probable cost to M.M.S. The Commission's report suggested it would be in the neighborhood of 0.5% of M.M.S. payments. Some thought it would be so high as to cause a generally lower pro-rating on the part of M.M.S. One of the more telling points in favor was that only in this way could the appearance of a legalized form of fee-splitting be obviated. At any rate Section 11 was approved. A fact of some importance in the debate was the introduction of a motion by Drs. W. J. Hart and D. N. C. McIntyre on behalf of the General Practitioners' Association. This reads as follows: "That this recommendation, Chapter III, Paragraph E be referred to the Professional Policy Committee for study and that their findings be given at the next Annual Meeting." This motion was defeated. Thus it is not only evident that the desire of the Meeting was to pass Section 11 and have it implemented, but that it definitely did not wish the P.P.C. to study the matter for a further year. Yet it had previously passed Section 2, which just as specifically stated that all such matters were the concern of the P.P.C.

Section 11A was proposed by Drs. Dwight Parkinson and Hugh Cameron as follows: "That in order to facilitate payment in surgical cases to the referring doctor, whether he be general practitioner or specialist, it is moved that he should submit directly for all services rendered and that payment shall no longer be dependent on the surgeon's signature." This was approved, although not without some apparent misunderstanding of the purpose of the proposers; and thus removed the last suggestion that M.M.S. practices could be interpreted as a legalized form of dichotomy.

The Professional Policy Committee began to function in February 1957. Its personnel is as follows: nominated by the General Practitioners' Association, Drs. M. J. Ranosky, W. J. Hart, D. N. C. McIntyre, A. J. Winestock, and W. G. Newman, and by a meeting of representatives of the different specialties, Drs. M. K. Kiernan, F. G. Allison, O. A. Schmidt, S. Israels, and D. Parkinson. Dr. Hugh Malcolmson acepted the difficult task of chairman, in January, 1957.

In its report to the Executive in February, 1957, the P.P.C. indicated its approval of Sections 3, 5, 6, 7, 8, 13, 15, and in principle Section 2. Also Section 11A was approved. The Executive responded with a motion referring all the above to M.M.S. Reporting to the Executive again in March, the P.P.C. presented its recommendations regarding equalized fees for house visits and their values. However, it was apparent then that all was not well with the P.P.C. and in particular it wanted definite terms of reference laid down by the Executive. A part of the report is quoted as follows: "At these meetings it is apparent that there is still some lack of clear understanding, both inside the committee and amongst some members of the Assocation at large, regarding the program of the new Committee. This was specifically outlined in a motion which requested that the Executive of the M.M.A. "outline in writing the Committee terms of reference and that these terms be published in the Review for the information of the membership." At the conclusion of the report, Dr. Malcolmson said (if the minutes are correct) that he felt the profession should be advised that these matters (the Commission's recommendations) were passed from the Committee of the Whole to the P.P.C. and not passed by the Annual Meeting. Thus the P.P.C. appeared to be taking the stand that the passage of Section 2 took precedence over the passage of all the other Sections. It should also be noted that the Executive accepted this report, thus apparently concurring with its contentions. This was consistent with its previous

referral of the non-controversial Sections to the P.P.C.

At the April meeting of the Executive, the P.P.C. reported that three meetings had been held, and that one and a half of these had been taken up with discussions of Section 11. No final report on it was ready, as consultations with Dr. MacMaster of the M.M.S. were to be held. It was also evident that the P.P.C. had been busy at other matters for it had recommended acceptable fees for eleven different procedures and tests.

It has to be recorded that during this time, the Executive had not stated its position on the question of whether or not, Section 11 should be passed, notwithstanding the emphatic arguments of Dr. Ruvin Lyons that it had already been passed at the Annual Meeting. At any rate, much time was taken up at the Executive meetings of March and April with discussions on the subject of the powers of the P.P.C. It was also evident that the intention of the P.P.C. was not to approve of Section 11: else why had it not dealt with it as with the other Sections? It is interesting that the mover and seconder of the motion referred to during the debate of the Committee of the Whole, calling for referral of Section 11 to the P.P.C. for a year's study, (and which was defeated), were now members of the P.P.C. and prepared to do that which they were specifically forbidden to do by the defeat of their own motion. It is also to be mentioned that they represented in both instances, the General Practitioners' Association.

In any event the P.P.C. was not yet satisfied with its terms of reference, and on May 14th, the following letter was despatched to the Executive Director of the M.M.A.

May 14, 1957.

Re: Terms of Reference for P.P.C.

At our organizational meeting chaired by Dr. Hudson we were given our terms of reference as presented in the report of the Special Commission. Dr. Hudson asked us to consider all the recommendations of the Commission in detail and report to the M.M.A. Executive. He gave, as his ruling, that we had the right to recommend the rejection of sections passed by the Annual Meeting if, after study, we considered them unwise.

In view of the sweeping changes passed so quickly at the Annual Meeting, we felt that it was most advantageous to have these questions studied in detail and at leisure by a fully representative committee such as the P.P.C. However, from time to time different members of the committee have brought up the subject as to whether we had the right to recommend the rejection of anything passed at the Annual Meeting. We sent a request to the Executive for clarification of our terms of reference and were again referred to the Commission Report. The Executive has recently requested from our committee implementation figures for Assistants' fees—No. 11. This has re-raised the whole matter of our responsibility and powers in relation to the disposition of the items listed as the Special Commission recommendations. The wisdom of No. 11 in general and its impact on M.M.S. in particular has been discussed for many hours by this Committee. We have already passed 11a—that the surgeon does not sign for the assistant—and are told that this meets ethical requirements.

Some of the points brought out in our study of No. 11 are as follows:

The Annual Meeting was informed that the sums of money involved in Assistants' Fees in 1955 was $29,000.00. This did not take into account the fact that some surgeons claim the whole amount and reimburse the assistant privately. There would undoubtedly be much further use made of surgical assistants by both specialists and G.P.'s if assistants were paid from the General Fund. It is not generally appreciated that members of clinics are considered as individuals by M.M.S. and thus would have access to the general fund for assistants' fees. It thus might be necessary to reduce all surgical fees in the future in order to keep assistants' fees from reducing the pro-rating to a disastrous level.

Before debating this difficult question any further the P.P.C. requests the Executive of the M.M.A. to give a definite ruling as to whether we have the power to recommend the rejection of a section passed at the Annual Meeting if, after study, we consider it to be unwise.

The decisions to dispatch this letter and its exact text were covered by motions unanimously approved by the members of the Committee.

Yours very truly,
H. M. Malcolmson, Chairman,
Professional Policy Committee,
Manitoba Medical Association.

The receipt of this missive occasioned the invitation of the members of the P.P.C. to participate in the meeting of the Executive on May 22nd. It was stated by Dr. Malcolmson that the P.P.C. had received the deliberations of the Executive at its last meeting and felt it not worthwhile to continue its meetings until the matter was clarified. There was of course a very considerable hassle at the time, but in the end the Executive approved a motion reading as follows: "That the P.P.C. be advised that it may make any recommendation to the Executive which it sees fit." It was also agreed that the P.P.C. might if it so desired, bring in majority and minority reports instead of having to present a unanimous decision.

Feeling had run rather high at this meeting. Those who were convinced that the Annual Meeting had intended the expeditious implementation of Section 11, were confronted with the likelihood of the P.P.C. rejecting the provisions of this Section altogether. Authority had just been given by the

Executive for just this course of action. The following motion propounded by Drs. Edward Johnson and Ruvin Lyons: "That the Executive request interpretation from our Counsel on this point in order to have a basis for consideration of recommendations that may be brought in by the Professional Policy Committee," was carried.

The P.P.C. was not prepared to submit a report at this meeting and a further meeting of the Executive was held on 11th June. At this time the P.P.C. reported that a motion recommending the implementation of Section 11 was defeated by a vote of eight to two. Both majority and minority reports were submitted, and after much discussion, were "received" rather than "accepted," by the Executive. Both reports are reprinted here without alteration.

June 7, 1957.

Dear Doctor Macfarland:

The Professional Policy Committee has now completed its deliberation on Section 11 of the Special Commission Report (dealing with Assistant's fees).

At a meeting of the whole Committee, held May 30, 1957, a motion upholding Commission recommendation No. 11 was presented and was defeated (2 for, 8 against).

It is my responsibility therefore to relate to the Executive of the Manitoba Medical Association that this Committee, by majority vote, recommended that the implementation of recommendation 11 be withheld.

Consistent with the stated duty contained in the Commission Report that this Committee "be charged with the responsibility of reporting fully to M.M.A. Executive all pertinent information regarding any problem upon which the Executive is asked to arbitrate," I have been instructed to list the following which influenced the majority vote:

1. The annual meeting was informed that the sum of money involved in Assistant's fees (using a previous year as a guide) was about $29,000.00.

Discussion within the Committee, however, indicates that if Recommendation 11 were put into effect the sum involved would be several times this amount for the following reasons:

A. An unknown number of surgeons pay the referring doctor directly rather than each submitting accounts to the M.M.S. It is not known whether this is a large or small factor but appears to be at least substantial.

B. Numerous assistant's fees would be paid by M.M.S. which are not paid under the present arrangements. Manitoba Medical Service treats all members of groups, clinics and partnerships as individuals hence all assistance within such groups would become a new expense. It is not contended that this would be unjust but only that it is another example of gross error in estimating the cost of paragraph 11.

C. There would undoubtedly be much greater use made of surgical assistants by both specialists and general practitioners particularly in hospitals having relatively few or no internes. This again raises the cost of paragraph 11 by an incalculable amount.

D. Finally, it does not seem to be within the realm of good judgment to approve a financial change in the M.M.S. for which there is absolutely no statistical foundation. This may be a minor or major change; there is no means of determining this at the present time.

2. The approval of Recommendation 11, provided the present M.M.S. assistant fee schedule is maintained, necessarily increases the surgical fees for most referred surgery by 15% or 30%. It is not clear if it was intended by the annual meeting to raise the fees to this extent in one bloc only, prior to the establishment of a relative value fee schedule.

Implementation of Recommendation 11 might well cause such a disastrous fall in the pro-rating it might be necessary to reduce all surgical fees.

3. Recommendation 11 refers to "Surgical Assistants Fee," a term which conveys the impression that the problem involves 15% of the surgical fee, yet in common parlance the term surgical assistants fee is generally considered, by usage, to mean that fee plus the 15% for post-operative care. The approval of paragraph 11 then solves only half of the problem. The Committee has demonstrated that some surgeons literally do turn over post-operative care to the referring doctor and others do not. It seems that this matter should be clarified by the surgical and other interested blocs.

4. Recommendation 11 would change traditional practice in this community. We feel it would be improper to deviate from normal practice as it obtains in the case of non-M.M.S. patients. An increase of total fee by 30% in an average case because of an assistant is not equitable to the private patient and is not fair to an insurance scheme.

Yours very truly,
H. M. Malcolmson, Chairman,
Professional Policy Committee.

Policy Committee Vote
Regarding Paragraph No. 11 Minority Dissent

"We believe it was the expressed wish of the Annual Meeting that No. 11 be passed and that the duty of the Policy Committee was to implement No. 11. We believe that No. 11 should and could be implemented using the following considerations.

Every physician is entitled to be paid fairly for all necessary work he does. He is not entitled to be paid for unnecessary or duplicated work. There are unavoidable injustices at the extremes of all categories. A pre-paid scheme must be geared to the average situation and cannot expand for the extremes.

Physicians care for all conditions within their field and are entitled to be paid for this care. Any-

thing outside their field they refer. The patient believes his referral is in his best interests and that the referring physician has no financial inducement for the direction or choice of referral. Whether the referral be medical, psychiatric, x-ray, endoscopy, ophthalmology, orthopedics, obstetrics, urology, minor or major surgery, the referring doctor is not entitled to payment for any part of the referred care If two or more conditions warrant two or more services each deserves payment and neither at the expense of the other.

In any surgical procedure the operating surgeon is responsible for the operation and the post-operative care and any complications, unless actually away from the city. This service and responsibility is of equal value whether the patient comes directly or by referral to the surgeon.

The necessity of paid assistance could be logically determined by the manner in which similar cases have been handled when referred from out of town or came directly to the surgeon.

If No. 11 is implemented in good faith along these lines, paying only for necessary assistant and concomitant care as with all other services, the annual sum would be much less instead of more than the currently quoted figure of $29,000.00."

Dwight Parkinson, M.D.,
Otto Schmidt, M.D.

In the discussion following, Dr. M. R. MacCharles, as president of the Board of Trustees of the M.M.S. refuted the accuracy of paragraph 1. B. of the majority report, stating that M.M.S. did not ever allow assistants fees or consultation fees in intra-group practice. He could not support the contention that the cost of Section 11 to M.M.S. would become excessive, or large enough to affect pro-ratings materially, and gave his estimate that the cost to M.M.S. would very likely be not more than 0.5% of its total outlay.

After receiving these assurances, the Executive approved the following motion: "That Section 11, namely 'Assistant's fees should be paid out of the general fund and not taken from the Surgeon's fee. The fee should be based on the value of the services rendered,' as approved by the Annual General Meeting of 1956, be sent to the Board of Trustees, Manitoba Medical Service."

Thus the matter of Section 11 was finally disposed of. Those who had advocated its speedy implementation were disappointed at the delay from October until June, and those who did not wish its implementation at all were also disappointed. However, your President, Dr. Hudson was able to remark, but without much satisfaction, that the letter of the law had been observed both ways: Section 11 had been referred to the P.P.C. under the terms of Section 2, as accepted by the Annual Meeting; and it had also been forwarded to the M.M.S. for implementation as directed by the Annual Meeting in its acceptance of Section 11 itself.

R. H. M.

Brandon and District Medical Association

A meeting of the Brandon and District Medical Association was held at Clear Lake on June 12th.

The meeting consisted of golf in the afternoon. There was a good turnout in spite of the rain. The McDiarmid cup was won by Dr. McMillan of the Hamiota Medical Group.

Dinner was served at the Lake Lodge and a short meeting followed. The new slate of Officers elected for the coming year, is as follows:

President — Dr. V. Sharpe, Brandon.
Vice-President — Dr. G. Lambertsen, Neepawa.
Secretary — Dr. H. Stevenson, Minnedosa.

Unfortunately, the speaker, Walter Boyd, had too little time to give his talk, and no time for a question and answer period. Consequently it was decided that Mr. Boyd be invited to another meeting and given adequate time for his talk and for questions and answers.

A motion was passed that the next meeting would be held in Neepawa.

Medico Legal

The Treatment of Sexual Deviates and Offenders*

George C. Sisler, M.D., F.R.C.P. (C)†
Winnipeg

The patient was a mining clerk, 37 years of age, who had come of his own volition to our Psychiatric Clinic because the police in the northern mining town in which he lived had been informed of his attempting to seduce another man in a hotel room. The horrified social worker who directed him to the Clinic, suggested that he was "a beast" who should be "locked up in Brandon;" actually had he remained in his home town he would have been arrested because of this incident.

He was a handsome, swarthy, muscular man, frank in discussing his problem and anxious for help. With him be brought an article from a popular pocket magazine telling of a man who was cured of homosexuality by hormone injections.

This man's developmental history was one that is characteristic of some homosexuals, and included a disinterested alcoholic father who ignored his son, and an over-protective and too permissive mother.

He completed Grade XII, and since then had held many good office jobs in various mines, and also spent some time in the R.C.M.P.

He was given no sex education by his parents and was quite innocent until he was seduced at the age of twelve years by a middle-aged man. Since the age of sixteen he had been a confirmed homosexual, being both the active and the passive partner. Young boys had never attracted him, and, though he was quite potent heterosexually and did indulge in sexual intercourse with women when an easy opportunity presented itself, he derived little pleasure from this and much preferred a male partner.

In twenty years of sexual activity he had only on this one occasion come into conflict with the police, and this because he was indiscreet while intoxicated.

After being advised that hormone therapy would not benefit him, he presented his own solution to the problem; he would limit his alcohol consumption realizing its danger so far as detection was concerned, but would continue his homosexual activities as discreetly as possible when masturbation, which he had practiced since adolescence, did not satisfy him.

My topic for this evening is "The Treatment of Sexual Deviates and Offenders." Sex has always been of great interest to mankind, and one must be thankful for this because were it not for this circumstance, there would be no mankind. The individual struggle during adolescence and young adulthood to obtain a balance between the urges of the sex drive for fulfillment and the taboos of the particular society in which one happens to live, results in an adult pattern of behaviour that is more or less satisfying for the individual and conforms more or less to what society expects. A residuum of this struggle is that many adults harbour desires and tendencies which society considers deviate and which show themselves at least in reveries and dreams, and "dirty" jokes if not in overt behaviour.

Though not of relevance so far as the medico-legal problem of the sexual offender is concerned, it may be of interest to first consider briefly the sexual mores of other cultures as revealed particularly in the studies of anthropologists in this century — particularly Malinowski, Mead and Kinsey.

This subject is widely if briefly reviewed in London and Caprio's book "Sexual Deviations." In Chapter I "Historical Survey" they have this to say:

". . . "Human society is basically organized in terms of the functions necessary to satisfy the needs of men and women and to carry forward the life of the race. Humanity must build upon its past in order to meet present demands, and at the same time prepare the way for future generations to come. Hence all major social institutions tend to group about the major functions which serve to gratify the fundamental human needs and to express and channelize the dominant drives of human nature.

As a primary factor in the organic and psychic field of human life and experience, sex is therefore the focus of an immense and intricate cluster of social institutions, attitudes, taboos, laws and problems. . .

. . . With particular reference to sex customs, there is almost no possible type of practice or action which has not in the history of society been governed by taboo, considered acceptable or unacceptable, trivial or important in almost contradictory ways. . .

. . . Regulation is conventional, not natural. The sex passion affects the weal or woe of human beings far more than hunger, vanity, or ghost fears. It has far more complications with other interests than the other great motives. There is no escaping the good and ill, the pleasure and pain, which inhere in it . . . No determination of what the regulation should be has ever yet been found in law or ethics which does not bear harshly on great numbers, and in all stages of civilization numbers are found who violate the regulations and live outside of them. . .

*From an address to the Winnipeg Medico-Legal Society, March 26, 1957.

†From the Department of Psychiatry, University of Manitoba and the Winnipeg General Hospital.

. . . Thus the mores hold control over the individual taste and caprice, and the individual experience reacts against the control.

This rule is also true, with respect to "notions" of propriety, decency, obscenity, the sense of shame . . ."

There are cultures in which, for example, homosexuality and incest are acceptable, but ordinary kissing is regarded as the ultimate in obscenity.

Some weeks ago now I engaged in the fruitless effort of examining the semantics of the title of this paper. I had hoped to define both "sexual deviate" and "sexual offender" and to find some essential difference between the two that would justify the inclusion of both terms in my title. In view of the sociological considerations previously referred to, however, I can only conclude that these terms have identical meanings and that both can only be defined as "persons who carry out acts defined as unlawful by the criminal code." This is, however, an unsatisfactory definition because of the vagueness of the picturesque terms used in the code. Perhaps inherent in the word "deviate" is the implication of a continuing or repetitive or preferred pattern of offending behaviour—but I shall return to this later.

It is of value, I believe, to consider the sexual deviate from two viewpoints — that of the law enforcement agencies and that of the physician. Now there is some common ground in these viewpoints, but it is useful for the courts and the psychiatrists who examine persons for the courts, to be reminded that for every offender appearing before them, there are dozens who bring their problem to their doctor (or possibly their priest or other counsellor). Further, though the psychiatric problem of sexual deviation includes both males and females, the legal problem is concerned only with the former. Apart from prostitution, women are not charged with sexual offences. Prostitution will not be included in this discussion, though the prostitute is a socially and/or psychologically ill individual of great interest and complexity. I shall also neglect the particular consideration of sexual offences in minors (the most frequent pattern here is promiscuity in girls).

I propose to first consider briefly the treatment of the sexual offender by the court and to follow this by a more detailed consideration of his treatment by the physician.

As in other situations, the Court has a dual function:

1) To provide for the community security and protection from the offender by causing him to cease his criminal behaviour.
2) To deter others from similar behaviour.

Now the first object may be attained only by denying the offender freedom until such times as he no longer behaves in a criminal manner. To do this wisely requires the extremely difficult task of attempting to predict human behavior. Clearly, however, the length of necessary detention may range from nil (in the case of an isolated act, repetition of which is prevented by the threat of punishment) to life (in the case of a repetitive pattern of behavior that remains unchanged). The duration of detention required may be decreased by punitive or medical therapeutic measures if these result in behavior change.

As satisfactory provision as seems currently possible is now made in our Criminal Code. This gives the Court wide latitude in punishing single offences and provides for indeterminate sentences for persons found to be "criminal sexual psychopaths"—i.e., "a person who by a course of misconduct in sexual matters, has shown a lack of power to control his impulses and who as a result is likely to attack or otherwise inflict injury, pain or evil on any person." A Royal Commission is now studying this provision, but I personally doubt that they will modify it significantly, though it is essential that the place of detention have adequate provision for treatment and research regarding treatment.

Apart from this provision, on perusing the criminal code, one may be surprised and perhaps alarmed, at the severity of punishment prescribed (including as it does whipping in some cases) and the lack of definition of the offences apart from such vague terms as "buggery," "sodomy," "act of gross indecency," "indecent assault," "disorderly conduct," and "contributing to juvenile delinquency."

On considering the practice of the courts at least locally, however, one is impressed at the infrequency with which persons are charged with or convicted of sexual offences, and the mild punishment usually imposed. This is usually a fine, a suspended sentence, or at most, a brief jail term. An exception to this are repeated offences and those involving children and/or violence. However, no person has ever been given, by the Manitoba Courts, an indeterminate sentence as a criminal sexual psychopath. There is evident care on the part of the law enforcement bodies that persons not be unjustly embarrassed by the accusation of sexual misbehaviour. There is the impression, too, that recidivism is not usual (which means that arrest and punishment is effective in at least making offenders more discreet).

These considerations lead to the vexing question "From whose sexual misbehavior does the community require protection?" — and since we are discussing "sexual deviates" we must face a second question — "deviant from what?" — The answer "Why, deviant from the normal!" is not satisfactory unless we can define "normal," which I cannot.

A consideration of the origins of our laws in this regard is not within the scope of this paper or my competence; however, it is clear from my previous remarks that these, as do other laws, vary greatly from era to era and from culture to culture within an era.

To quote Bowman[2]:

. . . "No state specifies homosexuality as a crime. Every state, however, prohibits a number of homosexual acts, usually under the name of sodomy or crime against nature. Bestiality, buggery, or the abominable crime are other terms, not all synonymous. Mutual consent between adults is no defense, nor the intended privacy of an act inadvertently discovered. . . Maximum penalties for sodomy vary from a life sentence to a fine . . . Observers have pointed out that in 1950-52 when New York reduced from felony to misdemeanor the offense of a sexual act in private between consenting adult males, California increased the penalty from 10 to 20 years imprisonment . . ."

To quote Kinsey[3] in this regard:

". . . There has been an insistence under our English-American codes that the simpler and more direct a sexual relation, the more completely it is confined to genital coitus, and the less the variation which enters into the performance of the act, the more acceptable the relationship is morally. This is the basis of much of our sex law, of a large portion of the sexual mores, and of the lower level's frequent avoidance of any variety in sexual relations—particularly if those relations are had with marital partners.

On the other hand, the educated portion of the population, especially within more recent generations, includes a good many persons who feel that any sort of activity which contributes to the significance of an emotional relationship between spouses is justified, and that no sort of sexual act is perverse if it so contributes to the marital relationship, even though exactly the same act between two persons who were not spouses might be considered a perversion. Even persons in high church positions have defended this thesis, with restrictions in certain cases that variety is acceptable only when the techniques are not an end in themselves, but a means of increasing the possibility and probability of conception as an outcome of the marriage. In the last two decades, marriage manuals have more or less uniformly emphasized the value of variety in coital techniques, and have probably encouraged an increasing proportion of the population to experiment. It is to be noted, however, that the English-American common law under which our courts still operate, and the specific statutes of our several states, makes no distinctions between acts that are "contrary to nature" in marriage, and acts that are "contrary to nature" outside of marriage." . . .

So far as our definition of "deviation" is concerned, and this question of "normal" vs. "abnormal," it was evident before the late Dr. Kinsey's time that so far as private sexual conduct is concerned none of us has any idea how his neighbour behaves. Many, if not most of our citizens, do not confine their sexual acts to heterosexual intercourse. What is considered by the individual as right or wrong or good or bad, normal or abnormal is dependent on his attitudes, experiences, and religious convictions. The psychiatrist is interested particularly in the individual's attitude toward his own sexual behaviour —and in regard to sex problems is consulted most often by persons who are in emotional turmoil because of their attitude toward behaviour generally considered normal.

The legal concern is particularly in regard to the harmful effects of the individuals' behaviour on others. The question "From whom must society be protected?" suggests a division of sexual offences into two groups—((after Davidson[4]).

1. Traumatizing or Menace Group

These involve the inflicting on others of physical harm or emotional trauma or the recruiting of sexual deviates from the ranks of the previously normal.

This group includes such acts as rape, sexual assaults and murders, seduction of boys or girls or mentally incompetent persons, incest against children, and initiating previously heterosexual adults into a pattern of homosexual behaviour.

There is difficulty in assessing the ability of an adult to seduce another adult into a pattern of perversion. This in itself, however, seems a rare occurrence and has to do particularly with homosexuality. It is clear that in the circumstances particularly of a boy being insecure and emotionally disturbed, a close dependent relationship with an adult homosexual may influence his pattern of sexual development. However, a similar occurrence between adults would only be possible if there were strong tendencies in this direction on the "victim's" part and also the peculiar situation of a close association as in prisons or isolated outposts where heterosexual outlets were not available.

2. Non-Traumatizing or Nuisance Group

This includes exhibitionism (exposure of the genitals in public), voyeurism ("peeping Tom" activities), travestism (the wearing by a man of women's clothes), fetishism (the stealing or destroying of women's clothes for sexual reasons), hoarding of obscene pictures, and private homosexual acts between co-operative adults.

"Nuisance" offenders appear before the Courts much more commonly than the "menace" group. There is no absolute division between the two. Further, though I have labelled them only nuisances, offences in the second group are all criminal. It is in this group, however, that we note behaviour which is often thought of as tempting by "normal" people. Voyeurism, involving taking advantage of the opportunity of peeking in on a woman disrobing, would doubtless be indulged in by most men if they were assured that they would not be found out. Acts in this group are common components of dreams, and may occur as an isolated act or an experiment especially under the stress of sexual deprivation or the lowered inhibitions of alcohol indulgence. Apart

from the normal vs. abnormal problems, it is clear that such isolated acts are not in themselves indication of mental disease or need for treatment. The public, however, rightfully expects to be spared witnessing these nuisance acts and if such acts are repetitious, they are indications of mental abnormality.

The courts are of course little interested in a man's dreams, tendencies, thoughts or temptations. In the process of maturing, normal and natural sexual drives are channelled and controlled as a result of family and general cultural pressures. Despite variations in the constitutional strength of the drive or variation in the efficacy of early learning experiences, society expects the individual to inhibit his urges, normal or deviate, until he finds a co-operative adult partner in a private situation. There is controversy regarding the legal and psychiatric question of the "irresistible urge" to carry out sexual or other acts, but the responsibility on the individual to control deviant sex urges differs little from his responsibility in controlling "normal" urges.

The matter of the responsibility of the individual for his acts leads to the consideration of the central psychiatric problem and to the division of offenders into:

a) those in whom the deviate behavior is a symptom of or part of some more general psychiatric disease.

b) those in whom the sexual behaviour itself is the main or only abnormality.

Both groups may indulge in "menace" or "nuisance" types of sexual misbehavior.

a) those with other psychiatric disease (in these the primary disease may be considered the cause of the sexual deviation and is the basis for determining criminal responsibility).

1) Mental Defectives and Epileptics
2) Alcoholics
3) Psychotics and Psychoneurotics including especially schizophrenics, manic excitements, and persons with organic brain diseases—particularly some senile persons.
4) Psychopaths (persons generally showing disregard for societies' laws and rules with little guilt).

Sexually deviated behavior is not a common accompaniment of any of these conditions, but disregard for social convention and lack of opportunity for normal sexual gratification as a consequence of the primary condition may lead to deviate behavior of any kind.

Treatment in this group involves the treatment of the primary disease which may or may not involve hospitalization and may or may not be successful. In some mental defective persons showing this as their only abnormality apart from the intellectual defect, a decrease in general sex drive as a result of hormone therapy may avoid institutionalization.

b) the second group — those in whom the behavior in itself is the main or only abnormality —is the more interesting and complex psychiatrically. We are not concerned, I repeat, with those who carry out an isolated act as an experiment whether or not they are caught at it. We are concerned with those for whom this is the usual or preferred method of sexual gratification. Each case must be studied as an individual problem of causation and treatment, but often the pattern of behavior is a fixed one that cannot be modified by any known treatment. Often too, the patient, though wishing to keep out of trouble, does not wish to change. This problem is seen particularly in the case of the male homosexual, and regarding causes and psychiatric treatment, I propose to discuss this in some detail as an example of one type of sexual deviation.

We may usefully consider four causal factors in homosexuality and thus survey possibilities for prevention and treatment:

1. Constitutional factors.
2. Endocrine or glandular factors.
3. Early childhood experiences.
4. Later environmental influences.

1. Constitutional Factors

As in all diseases concerning the cause of which little is known, a constitutional factor is assumed. This is as much as to say—one is born either homosexual or heterosexual — or more accurately, each individual is endowed with a varying potential for behavior in either direction. Even Sigmund Freud, who of course emphasized the importance of environmental factors in mental disease, had this to say:

". . . Now we are forced to the conclusion that there is indeed something congenital at the basis of perversions, but it is something which is congenital in all persons, which as a predisposition may fluctuate in intensity, and that it is brought into prominence by the influences of life. . . "[5]

Studies of hereditary factors in homosexuality are not revealing. Genetically one is either male or female, and certainly if there are hereditary influences they are not transmitted to offspring in a currently predictable manner. Pre-natal developmental defects may occur in the sex organs as in many other parts of the body. Severe defects of this nature are exceedingly rare, though the sexual adjustment of these unfortunate individuals is often difficult in as much as they may have genital organs with characteristics of both sexes. The great majority of homosexuals, however, have anatomically normal sex organs. Very few are interested in considering surgical alteration of their genital organs; and surprisingly, most transvestites (those who wish to dress as women) are not homosexual — they wish to masquerade as women but are not interested in sexual contacts with men.

Finally, studies of the living brain with the electro-encephalogram and under the microscope at post mortem has so far revealed no helpful clues.

2. Endocrine or Glandular Factors

This would appear to be the most promising area in which to seek an explanation of and find treatment for this condition. However, our actual knowledge in this area is very limited. The activity of the endocrine glands (particularly the pituitary, the thyroid, the adrenal and the testes or ovaries) controls bodily growth and physique and also intensity and perhaps the direction of the sex drive. Sexual drive does commonly change in intensity, but not direction, in many illnesses, some of them endocrine diseases. In debilitating disease of any nature sexual drive is usually decreased. Such endocrine diseases as hypothyroidism and diabetes if untreated may produce the same result. In some persons endocrine disease (e.g., hyperthyroidism) increases sex drive. None of these conditions however, cause a deviation of the drive from heterosexual to homosexual. There are certain excessively rare hormone tumours of the sex glands and adrenal glands which will produce masculinizing changes in women and more rarely feminizing changes in men, and this may be accompanied by homosexual interests. However attempts to find abnormalities in this area in homosexuals as a group have been disappoining.

Reports in the literature on this aspect of cause and treatment are varied, but generally indicate a poor correlation between bodily build, the levels of male and female hormones (as measured by blood androgen and estrogen levels) and treatment results. The hope that, since males produce both "male" and "female" hormones, an upset in the ratio of these might be identified in homosexuals, has not been realized despite some hopeful work by Myerson[8] and others in the early 1940's.

No known hormonal therapy and particularly that using male sex hormones is effective in altering homosexual interests or behavior. The medical literature from Europe and from Denmark in particular, does contain reports on the use of female sex hormone and of castration in the treatment of aggressive sex offenders. Female sex hormone in adequate dosage will in large percentage of men reduce their sexual drive whether hetero or homo-sexual. Castration has a similar effect in about 50% of men. The common statement that castration does not diminish sexual potency in the adult is not accurate, though the effect often occurs gradually and may of course act at least partially psychologically.

Apart from ill-considered vindictive outbursts, the climate of opinion on this continent generally does not permit the castration of even aggressive sexual criminals. This is fortunate since it is the aggressiveness more than their sexual potency that is the real social danger, and the effects of castration on this may be to increase hostile outbursts.

It seems appropriate at this point to discuss several widely held assumptions regarding homosexuality.

The first assumption that a given male is simply either homosexual or heterosexual. Some males throughout their life are only sexually attracted by women, and some abhor sexual contact with women and are interested only in men. But between the two is a spectrum that indicates that many males at various periods in their life have had urges toward and engaged in both homosexual and heterosexual behaviour. Though the validity of some of Dr. Kinsey's conclusions[3, 6] may be questioned, he has at least found out how people claim to behave sexually. From the detailed histories of some five thousand males of all ages from adolescence upwards, including college populations and a wide variety of social and professional groups, he concludes that at least 1/3 of all males have had homosexual experience to the point of orgasm at some time between adolescence and old age.

Regarding the social implications of these findings, Kinsey[3] has this to say:

". . . "It is obvious that social interpretations of the homosexual behaviour of any individual may be materially affected by a consideration of what is now known about the behavior of the population as a whole. Social reactions to the homosexual have obviously been based on the general belief that a deviant individual is unique and as such, needs special consideration. When it is recognized that the particular boy who is discovered in homosexual relations in school, the business man who is having such activity, and the institutional inmate with a homosexual record, are involved in behavior that is not fundamentally different from that of a fourth to a third of all of the rest of the population, the activity of the single individual acquires a somewhat different social significance.

Community gossip and reactions to rumors of homosexual activity in the history of some member of the community would probably be modified, if it were kept in mind that the same individual may have a considerable heterosexual element in his history as well. The social worker who is inclined to label a particular boy or older male in her case load as homosexual, because he is known to have had some such activity, should keep in mind that there is every gradation between complete homosexuality and complete heterosexuality. Administrators in institutions, officials in the Army and Navy, and many other persons in charge of groups of males may profitably consider the balance between the heterosexual and homosexual in an individual's history, rather than the homosexual aspect alone.

. . . The difficulty of the situation becomes still more apparent when it is realized that these

generalizations concerning the incidence and frequency of homosexual activity apply in varying degrees to every social level, to persons in every occupation, and of every age in the community. The police force and court officials who attempt to enforce the sex laws, the clergymen and business men and every other group in the city which periodically calls for enforcement of the laws—particularly the laws against sexual "perversion"—have given a record of incidences and frequencies in the homosexual which are as high as those of the rest of the social level to which they belong. It is not a matter of individual hypocrisy which leads officials with homosexual histories to become prosecutors of the homosexual activity in the community. They themselves are the victims of the mores, and the public demand that they protect these mores. As long as there are such gaps between the traditional custom and the actual behavior of the population, such inconsistencies will continue to exist.

There are those who will contend that the immorality of homosexual behaviour calls for its suppression no matter what the facts are concerning the incidence and frequency of such activity in the population. Some have demanded that homosexuality be completely eliminated from society by a concentrated attack upon it at every point, and the "treatment" or isolation of all individuals with any homosexual tendencies. Whether such a program is morally desirable is a matter on which a scientist is not qualified to pass judgment; but whether such a program is physically feasible is a matter for scientific determination. The homosexual has been a significant part of human sexual activity ever since the dawn of history, primarily because it is an expression of capacities that are basic in the human animal. . . "

However we are concerned psychiatrically with, and when the term homosexual is used we refer to those whose sexual interests are mainly or predominantly homosexual; this group comprises about 5% of the male population.

A second assumption is that there is a correlation between bodily build and the direction of sexual interest. There is, however, no evidence that as a group, homosexuals differ in physique from the general population. The prototype of masculinity — the hairy, slim, broad shouldered, square jawed, man with heavy bone and muscle structure may be homosexual. Similarly men of less "masculine" physique—(frail, obese, etc.) may be entirely heterosexual in their interests.

Some homosexuals do develop a gait, facial and speech mannerisms that are a caricature of those typical of women, but these are not invariable and very few homosexuals ever dress as women.

A third assumption is that homosexuals do not marry. It is true that many homosexuals do not marry and that homosexual behavior is commoner in unmarried than in married persons. However, some homosexuals do marry and have children.

Finally the occupational and avocational choices of homosexuals form an intriguing study. A common assumption is that men engaged in artistic pursuits (e.g., the ballet) are homosexual, and that those in "masculine" (e.g., laboring) work are not. This is an over-simplification. Our unromantic western culture is inclined to equate the arts with "femininity" but this is only a point of view, and many persons who engage in these pursuits do not obtain their satisfactions homosexually.

3. Early Childhood Experiences

Various schools of psychology, and particularly the Freudian school, emphasize the vicissitudes of the early childhood period in determining the direction of sexual interests. However, it is often impossible to reconstruct clearly the childhood attitudes and experiences of a given adult patient. In individual cases it does often appear that significant causative factors were evident in the attitude of the parents toward both their child's sex and toward evidences of sexual interest on his part.

In the book "Changing Concepts of Homosexuality" Clara Thompson[7] says:

"... A very important determining influence in the development of homosexuality is the child's awareness that his sex was a disappointment to his parents or to the more important parent, especially if their disappointment leads them to treat the child as if he were of the opposite sex. . ."

The boy normally comes to identify with and emulate his father. Personality characteristics in parents that cause him to identify with the mother may alter his sexual development.

Despite these apparent influences in individual patients, however, it is clear that no incident or factor or family situation invariably or even usually leads to homosexuality, or indeed is proof against it.

4. Later Environmental Influences

Under this heading are such circumstances as explicit parental prohibition of contacts with girls in adolescence reinforced by accounts of the dangers of sexual relations.

The immediate need that may determine temporary homosexual behavior may be isolation with men and away from women for prolonged periods (e.g., in war or in prison). Other continuing causative tendencies of many possible origins may be fear of the opposite sex, a need to defy authority, or a fear of the responsibility and uncertainties of making a heterosexual adjustment.

Of particular importance is the early adolescent period when sexual desires are awakening, boys are shy of girls, and mutual sexual play between boys is common. If for any reason a lonely, insecure, inferior feeling boy is sought out by, and finds companionship with a homosexual adult at this time, and this leads to his repeated seduction—this in many cases leads to continuing homosexual interests and behavior.

In summary the development of homosexuality in a given case may be the result of the influence of four factors in varying combinations:

1) Constitutional endowment
2) Endocrine or glandular activity
3) Early childhood experiences
4) Later environmental influences

I have indicated that there are few current therapeutic possibilities in the use of hormones. The only exception to this may be a small group of adolescent boys of effeminate bodily build and homosexual interests, in whom therapy with male sex hormones may normalize the direction of the sexual drive.

The psychiatrist sees homosexuals with varying attitudes toward their conditions. Some have no desire to change and prefer not to give up a known pleasure for an unknown one. These are of no psychiatric therapeutic interest and should be of no legal interest unless they are part of that small group of homosexuals who seduce boys and/or carry on their sexual activities in public places.

Some are desperately anxious and depressed by their condition and do wish help.

Even for the homosexual who wishes to become heterosexual, it is rarely that the psychiatrist attempts anything more than to help him to live with his condition and to treat the anxieties and depression that are an outcome of his attitude toward himself. In some patients of good intelligence in whom childhood or later experience have evidently contributed to causing the deviation, psychotherapy may be attempted over a long period of time in order to undo the effects of the previous experiences. Again, however, despite the seeming promise of this approach, results are generally disappointing. Even very intensive psychotherapy of a psychoanalytic type involving interviews for several hours a week over many years has only in isolated cases resulted in a change in sexual behavior.

Much research remains to be done in the field of the cause and treatment of sexual deviations in general and homosexuality in particular. By and large the courts have exaggerated expectations of what can currently be effected in altering a pattern of sexual behavior.

However, much of value can be done to prevent, by sex education, and to relieve, by psychiatric treatment, the guilt and anxiety of those many persons who suffer because of their attitude toward their own sexual behavior and thoughts, normal or deviate.

It is essential, further, that medical psychiatric and psychological examination be made of sexual offenders coming before the courts for "traumatizing" or repetitive "nuisance" types of offences. Thus only can it be determined whether the sexual deviation is a symptom of some other mental disease, or is itself the only abnormality. Therapeutic possibilities, if present, can then be outlined and carried out either on an out-patient basis, in a mental hospital or in prison depending on the nature of the offence and the psychiatric treatment required. Much of the needed research regarding treatment will have to be carried out in either special mental hospitals with good security or prisons that have facilities for these services. Recent work in group psychotherapy in these settings is encouraging.

I realize that I have not discussed in any detail many of the various types of sexual deviation. However, this would be an impossible task for one evening. If I were to have attempted this however, it would have been evident, as was the case with homosexuality, that there are gaps in our knowledge of the cause and treatment of most sexual deviations.

Each patient must be studied as a unique individual with his various emotional assets and liabilities. The courts are rightly concerned with the prognosis of a given sexual deviate, and in the case of the "nuisance" offender ask: "But will he commit rape or murder next time?" In general it can be said that most sex offenders do not recidivate, and those who do, tend to repeat prior offences rather than to develop more serious forms of criminality. However, such general statements are of little practical value in planning for the individual offender. Though experience indicates that the vast majority of "nuisance" deviates do not become "menace" deviates; i.e., the exhibitionists and peepers remain only a nuisance, there are exceptions to this and our best efforts at identifying dangerous traits can only be made on the basis of the thorough study of the individual offender.

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Medical Memoranda

A Teacher of Anatomy, Dr. W. S. England

Ross Mitchell, M.D.

Manitoba and Winnipeg at the turn of the century!

The Victorian era was ending, British Imperialism was at high tide and Rudyard Kipling was its prophet. Laurier had proclaimed that the twentieth century belonged to Canada. After the recession from the boom years of 1881-1882, Manitoba was again recognized as a land of opportunity and again attracted young people from Eastern Canada.

In medicine it was the horse and buggy era. Every doctor practiced general medicine though a few, because of more extended training and aptitude, limited their practice to certain fields. At that time there were two general hospitals in Greater Winnipeg, St. Boniface and the Winnipeg General and two maternity hospitals, Grace and Misericordia. Manitoba Medical College was well established in its brick buildings at Kate and McDermot.

In 1890 the Board of the Winnipeg General hospital needed a new medical superintendent. They found one in a young house surgeon of the Montreal General hospital who was highly recommended from several sources. He was William Stephan England, only twenty-two years of age but one who learned early to assume responsibility. He was born on March 17, 1868 and studied medicine at McGill under such outstanding teachers as R. Palmer Howard, William Osler and Francis Shepherd. The latter, who was head of the anatomy department, had studied in Europe under the best masters and had a remarkable grasp of his subject. His motto was thoroughness and McGill students became known for their anatomical knowledge and keenness. England graduated M.D.C.M. with honors in 1889 and won a position on the interne staff of the Montreal General hospital.

He had the example of a brother, six years his senior, who was already making a name as a medical teacher and surgeon. The family home was at Cowansville, Que., and the parents were of U.E. Loyalist stock. Frank became a surgeon at Western Hospital, Montreal and governor of the American College of Surgeons. He died in 1942 in his 80th year.

Dr. H. E. MacDermot, consulting editor of the Canadian Medical Association Journal, writes that Frank England was "a bluff, kindly man."

The Winnipeg General Hospital

In May, 1890, he assumed his duties as medical superintendent of the Winnipeg General hospital. His assistant was Dr. J. O. Todd and the resident student was E. S. Popham, a former school master. All three did much in later years in the teaching of medicine.

It was no easy position that England took over. There were conflicting interests and medical jealousies. One group threatened to complain to the Manitoba Legislative over alleged favoritism. The Medical Faculty, however, wrote this to the Hospital Board. "Dr. England, the superintendent, has performed his onerous, delicate and difficult duties with urbanity, impartiality and most unusual ability and discretion."

In July, 1892, he resigned "much to the regret of the Board" 'and began private practice in Winnipeg, or possibly went abroad for postgraduate work. When I first knew him his office was in the Dundee block at the corner of Main and Portage. In 1895 he was appointed to the honorary attending staff and served for thirteen years until his death.

Manitoba Medical College

Also in 1895 he was appointed lecturer in histology and pathology. In the following years he was Demonstrator in Anatomy and in 1907 he was Professor of Anatomy and head of the department. During six years as a medical student and intern in The Winnipeg General, I saw much of him as a teacher of anatomy and surgery. At that time anatomy and physiology were the basic studies of the preclinical years. Biochemistry or "Physiological Chemistry" was just being introduced into the curriculum. Anatomy was divided into descriptive and practical anatomy. The former was taught by Dr. W. J. Neilson whose prodigious memory enabled him to recite Gray's Anatomy word for word. Dr. England taught only in the dissecting room and no cranial nerve had so long and involved a course that he could not display it. With the students he was a favorite because of his eccentricity, his interest in their sports and his gruff kindliness.

Appearance

He was tall, his face long, his eyes protuberant and his voice rough. He had a horse, George, to whom he was attached and who in return could be relied on to take him on his rounds and bring him safely home. One morning about noon, Dr. England was dressing after an operation on the third floor of the Jubilee wing and talking to his assistants. The day was warm and the window open. George, who had been waiting patiently in the yard below, whinnied loud. Dr. England put his head out of the window and cried down: "Ho George." The horse whinnied again, England turned to his assistants, "He knows me, old George knows me!"

Fashion of that day called for heavy drinking. Dr. E. W. Montgomery has related how Dr. J. W. Good for one day took over as bartender in a Lombard street saloon. The bars of the Woodbine, Criterion, Clarendon, and Queen's "the longest bar west of the Great Lakes" were well patronized and indulgence there may have contributed to Dr. England's early death on April 24, 1908. He is buried in St. John's cemetery.

Surgeon

As a surgeon he was bold and resourceful. His knowledge of anatomy enabled him to resect a superior maxilla for cancer at a time when blood transfusions and intravenous fluids were unknown. He operated successfully on aneurysm of the femoral artery resulting from a gunshot wound. One morning he tackled a huge hydatid cyst of the liver. To catch the expected flow a tin tub had been placed on the floor. One sweep of the scalpel opened into the cyst and a fountain of fluid with cysts and daughter cysts gushed out. He stepped into the tub to keep his feet dry and jocularly called out "Help, Help!"

His reading kept him abreast of surgical literature. In his office he had a book on Anatomy for Artists, of no utilitarian value, but whose illustrations appealed to his sense of beauty. His tastes may have been similar to those of his fellow student of anatomy at McGill, R. Tait MacKenzie, who made a name as a sculptor and artist of athletes in action. After England's death his medical books and instruments were sold. Among the books were two volumes in half leather of "Operative Gynecology" by Howard Kelly which had only recently appeared. With its unsurpassed drawings by Max Brodel it was the masterpiece of its day. The two volumes now in the library of the Women's Pavilion bear his name stamped therein.

The Medical College

His greatest moment came at a faculty meeting perhaps in 1904. The old buildings of the Manitoba Medical College were outgrown and the site inadequate for a new structure. For long the faculty had talked of a new site but had reached no decision. On this particular evening as the fruitless discussion went on, England rose. "Gentlemen," he said, "I hold an option on lots on the southwest corner of Bannatyne and Emily. They are just across the street from the General Hospital and are suitable in every way for the new college building. If you wish to take up the option, it is yours, if not, I shall be glad to hold it as an investment." Land values were rising rapidly and he could have held it for a time, then made a good profit, but his first loyalty was to the college.

In a sense the Medical College building opened in January 1906, is his monument.

The following quotation may be found in the Manitoba Free Press of April 27, 1908, three days after his death at forty:

"We, the staff to the general hospital, wish to express our great sorrow and sense of loss in the death of our colleague, Dr. W. S. England. He was medical superintendent during a period of great transition when there was practically a revolution in hospital methods, and to him, in no small degree, is due the present status of our hospital as a modern up-to-date institution. Throughout the remainder of his life the interest was unabated and if one thing distinguished him personally, besides his great surgical skill, it was his unvarying kindness to those under his care."

It was a privilege to have known him and to have learned from him.

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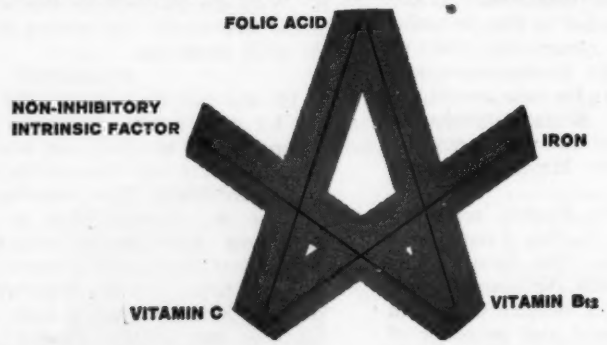

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A Survey of Hospital Beds in the Winnipeg Area — 1956-1965

Alan A. Klass, M.D.

What are the probabilities with regard to the availability of hospital beds for general use within the next decade?

For the purpose of this study, the term "Greater Winnipeg" is interpreted to include territory* and declared to have a population (1956) of 409,687. (B. R. Bilshen of the Dominion Bureau of Statistics —personal communication dated Dec. 5, 1956).

A projection of future growth in a restricted area is difficult to determine and the Dominion Bureau of Statistics does not issue projections of population in a particular locality. However, because it was believed essential for the purpose of this study to have an estimate of future population of this particular area, the figure of a 2½% annual increment was accepted as being reasonably valid. This figure corresponds to the population increase in the province of Manitoba in the 12-month period 1954-1955 (Dominion Bureau of Statistics figures) and is in line with growth projections for the whole of Canada, acepted by the Gordon Commission**.

It should be noted that this 2½% annual increment affects general population—not hospital population. No account has been taken of such factors as the steadily increasing proportion of elderly subjects within the general population (i.e., those more likely to require prolonged hospital care). Nor has account been taken of possible temporary but substantial spurts of population by immigration of comparatively large numbers of younger and more prolific elements into this area.

In this survey "hospital beds for general use" has been assumed to exclude beds designated solely for tuberculosis, convalescent care, acute infectious fever, and major psychiatric care. In addition, the hospital capacity of certain smaller hospitals, e.g., Victoria and Concordia, have not been included in these figures, since these do not contemplate any major additions and will therefore not affect the comparative ratio of beds to population. Furthermore, figures from Deer Lodge Hospital have not been included in this study, since these beds are in general not available to the average private practitioner for the use of his patients.

With the above qualifications an assessment has been made (Appendix A and Chart B) of the proportion of general hospital beds per 1000 population. The figures for the bed state in each year up to 1960 were obtained from the Superintendents

*This figure includes 256,683 for the city of Winnipeg itself, together with the population of Assiniboia, Brooklands, Charleswood, Fort Garry, Kildonan East, Kildonan North, Kildonan West, Old Kildonan, St. Boniface, St. James, St. Vital, Transcona and Tuxedo. (B. R. Bilshen, Dominion Bureau of Statistics).

**This 2½% of annual increment applied to an urban area may be somewhat on the conservative side since it is based on figures from a total dominion and provincial level. There has been a definite trend to a more rapid rate of increase in urban areas than that of rural areas.

of the Winnipeg General, Grace, Misericordia and St. Boniface Hospitals. The 1960 level of beds for these hospitals was then assumed as being static up to the year 1965 and a compilation for 1965 was then made for comparative purposes.

Summary

It will be noted from Appendix A that with the completion of the current hospital extension programme, there will be a progressive rise in bed/population ratio from 5.7 per 1000 in 1956 to 6.8 per 1000 in 1958. From this time there will be a progressive decline in the ratio so that in 1965 the ratio will be down to 5.6 per 1000.

Conclusion

The difficulty currently experienced by reason of long waiting lists for hospital admissions in Greater Winnipeg, is not likely to be appreciably affected by the current extension in hospital beds, and by 1965 the situation is likely to be actually worse than it is in 1957.

I am grateful to the following for having provided the figures upon which this survey is based.

B. R. Bilshen, Chief Institutions Sec., Dominion Bureau of Statistics.

G. L. Pickering, Comptroller, St. Boniface Hospital.

G. T. Potvin, Assistant Administrator, Misericordia Hospital.

Gladys W. Gage, Brigadier, Grace Hospital.

C. K. Temple, Assistant Superintendent, Children's Hospital.

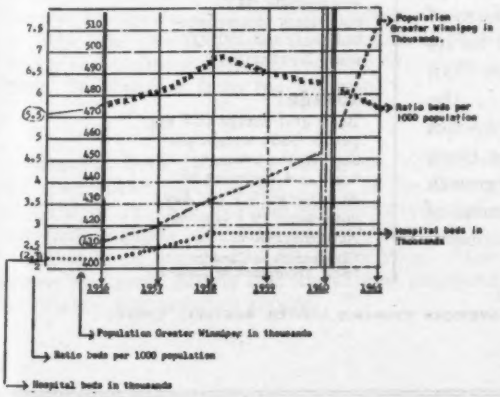
L. O. Bradley, M.D., Administrator, Winnipeg General Hospital.

Appendix A.

		1956	1957	1958	1959	1960	1965
Wpg. General	*A	858	830	1154	1100	1100	1100
Childrens		115	260	260	260	260	260
Grace	*B	287	287	310	310	310	310
Misericordia	*B	379	489	508	508	508	508
St. Boniface	*B	699	699	699	699	699	699
Totals		2338	2565	2931	2877	2877	2877
Pop. Gr. Winnipeg		409687	420000	430500	441250	452250	511680
Ratio Beds per 1000		5.7	6.1	6.8	6.5	6.3	5.6

*A—includes 150 bassinets
*B—includes 60 bassinets

Chart B



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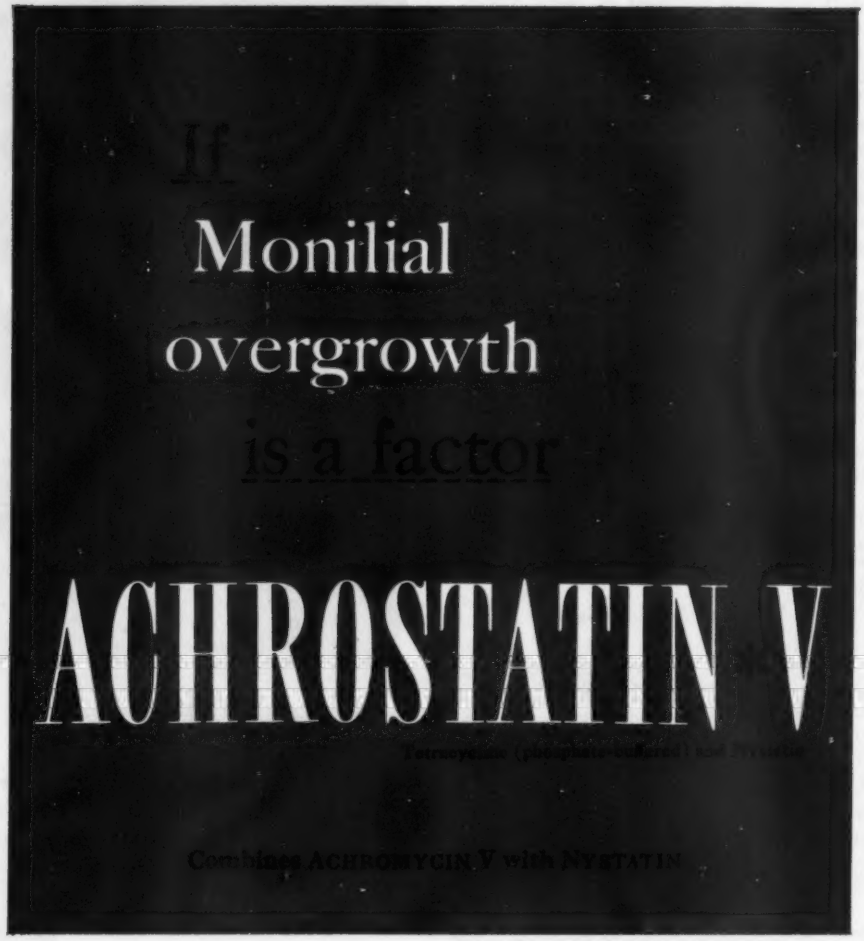

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Social News

Reported by K. Borthwick-Leslie, M.D.

Dr. Harry Medovy is to be congratulated on his decision to limit his practice to Consultation and Referred Pediatrics. So few have so much sense. Professor with teaching responsibilities, hospital appointments, lecture tours and full time private practice, someone has to suffer, usually the individual. A longer, happier life, Harry. Incidentally, the new office is Room 11, Children's Hospital, Winnipeg 3, Man. Tel. SP 5-8311.

♦

Welcome to Dr. John M. Bowman, recently announced as joining the Manitoba Clinic in the Department of Pediatrics.

♦

Travelling in their private plane, yet! Dr. and Mrs. H. R. McDiarmid, Tofino, Vancouver Island, with baby son, Charles, are the guests of Mrs. McDiarmid's parents, Mr. and Mrs. C. F. Honeyman, Campbell St. So nice to hear of you again, Pat.

♦

Dr. and Mrs. Ralph Z. Levene, New York, are visiting with family and friends in Winnipeg. Dr. Levene recently received the degree of Doctor of Medical Science in Ophthalmology from the Bellevue Post Graduate Medical School.

♦

Dr. Daniel Shapiro has been named co-recipient of a $12,420 U.S. Public Health Service award for research work at the Institute of Research, Los Angeles.

♦

Dr. and Mrs. W. John Barber, Beaverbrook Apts., were honored recently on the happy occasion of their Golden Wedding Anniversary. Dr. Barber graduated from Trinity College, Toronto, in 1904, and after post graduate studies in Edinburgh and Glasgow began practice in Winnipeg in 1906. Best wishes from the Bulletin.

♦

Reports, both authentic and grape vine, from the Clear Lake meeting last week, of the College of General Practice, confirm the expected highly successful agenda, scientific and otherwise.

In spite of strong "duck" competition, attendance was good, papers and discussions excellent, hospitality and weather superb.

Overheard in the halls of learning and quoting one of the V.I.P. types prior to the weekend:

"Hmph, fine sort of programme, Friday to register, Saturday for meetings; otherwise golf, riding, fishing, cocktails, dinners and dances—the intellectuals."

Jealousy will get you nowhere, brother.

♦

The engagement is announced of Margaret Ruth Jameson, Hayfield, Man. and Ian Boyd McTavish, youngest son of Dr. and Mrs. G. B. McTavish, South Drive, Fort Garry. The wedding will take place Oct. 5th at 2 p.m. in Westminster Church.

♦

Mr. and Mrs. W. H. Faulder, Elm St., announce the engagement of their daughter Louise Gail to Dr. John D. Adamson, only son of Drs. Emma and Gilbert Adamson, South Drive, Fort Garry. The wedding will take place Oct. 19th at 1.30 p.m., in St. Aidan's Church.

Fort Garry seems to have been the victim of numerous cupid's darts this year:

♦

Dr. and Mrs. Percy Barsky, nee Shirley Rosenfeld, announce the birth of Ronald Jay, August 25, 1957.

♦

Dr. and Mrs. Irwin Peever announce a baby brother Gordon for Sandra and Douglas.

♦

Dr. and Mrs. J. H. More, Gladstone, Man., on August 24, 1957 welcomed their daughter, Nancy Jane.

♦

Dr. and Mrs. J. B. Turnbull report the birth of a son, John Robert, in Regina General Hospital, August 19, 1957.

♦

Dr. and Mrs. O. Domke, announce the arrival August 16, 1957 of Lisa Diane.

♦

Signing off. So glad to know that smoking cigarettes "fogs one's brain" or so Pitt Perrin thinks. It's so much more pleasant to have that excuse rather than just senility or some such.

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Department of Health and Public Welfare

Comparisons Communicable Diseases — Manitoba (Whites and Indians)

DISEASES	1957 July 14 to Aug. 10,'57	1957 June 16 to July 13,'57	1956 July 15 to Aug. 11,'56	1956 June 17 to July 14,'56	Total Jan. 1 to Aug. 10,'57	Total Jan. 1 to Aug. 11,'56
Anterior Poliomyelitis	1	1	1	....	6	6
Chickenpox	44	82	45	43	724	708
Diphtheria	1	....	1	....	19	3
Diarrhoea and Enteritis, under 1 year	1	1	11	11	120	92
Diphtheria Carriers	....	....	....	....	9	2
Dysentery—Amoebic	....	....	....	....	....	....
Dysentery—Bacillary	1	21	....	....	26	9
Erysipelas	1	....	....	....	7	11
Encephalitis	1	1	....	1	2	3
Influenza	1	9	1	2	79	76
Measles	179	584	36	62	3241	1110
Measles—German	3	7	4	6	91	161
Meningococcal Meningitis	....	4	....	1	14	4
Mumps	26	38	26	26	475	943
Ophthalmia Neonatorum	....	....	....	....	....	....
Pneumonia, Lobar	....	....	....	....	....	....
Puerperal Fever	....	1	....	....	1	1
Scarlet Fever	4	2	1	6	73	95
Septic Sore Throat	3	....	3	....	10	7
Smallpox	....	....	....	....	....	....
Tetanus	....	....	....	....	1	2
Trachoma	....	....	....	....	....	....
Tuberculosis	31	40	98	36	280	475
Typhoid Fever	....	....	....	....	1	....
Typhoid Paratyphoid	....	....	....	....	....	1
Typhoid Carriers	....	....	....	....	1	....
Undulant Fever	1	2		1	4	9
Whooping Cough	1	9	42	30	102	298
Gonorrhoea	96	100	78	70	668	760
Syphilis	1	8	6	6	59	45

Four Week Period July 14 to August 10, 1957

DISEASES (White Cases Only) *Approximate population	*850,000 Manitoba	*880,665 Saskatchewan	*5,404,933 Ontario	*2,982,000 Minnesota
Anterior Polio	1	2	16	24
Chickenpox	44	3	265	....
Diarrhoea and Enteritis, under 1 yr.	9	—	—	....
Diphtheria	1	....	....	....
Diphtheria Carriers	....	....	....	....
Dysentery—Amoebic	....	....	....	....
Dysentery—Bacillary	1	2	10	19
Encephalitis Epidemica	1	—	3	—
Erysipelas	1	1	2	—
Influenza	1	—	3	53
Jaundice, Infectious	13	86	31	21
Measles	179	11	338	49
German Measles	3	15	84	—
Meningitis Meningococcal	—	—	3	8
Mumps	26	4	370	—
Psittacosis	—	—	—	4
Puerperal Fever	—	—	—	—
Scarlet Fever	4	—	24	9
Septic Sore Throat	3	15	15	9
Smallpox	—	—	—	—
Tetanus	—	—	—	—
Trachoma	—	—	—	—
Tuberculosis	31	27	73	93
Typhoid Fever	—	—	3	—
Typhoid Para-Typhoid	—	—	1	—
Typhoid Carrier	—	1	—	—
Undulant Fever	1	—	2	2
Whooping Cough	1	—	237	4
Gonorrhoea	96	†	95	†
Syphilis	1	†	19	†

†These figures were not given on their reports.

DEATHS FROM REPORTABLE DISEASES

July, 1957

Urban—Cancer, 77; Pneumonia, Lobar (490), 3; Pneumonia (other forms), 14; Syphilis, 2; Tuberculosis, 3. Other deaths over one year, 261. Other deaths under one year, 23. Stillbirths, 13. Total, 396.

Rural—Cancer, 24; Pneumonia (other forms), 8; Tuberculosis, 3; Dysentery, unspecified, 1. Other deaths over one year, 182. Other deaths under one year, 21. Stillbirths, 11. Total, 250.

Indians—Diarrhoea and Enteritis, 2. Other deaths over one year, 2. Other deaths under one year, 1. Total, 5.

◆

Anterior Poliomyelitis — One paralytic case from Greater Winnipeg in an eighteen month unvaccinated child. This is the first case reported since May.

Diphtheria—One case in July from the same area of Winnipeg as the winter epidemic. With fall coming soon it will pay to immunize.

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American College of Surgeons Outline of Sectional Meetings During 1958

(detailed releases later in the year)

All members of the medical profession are invited to attend any of the following 1958 Sectional Meetings of the American College of Surgeons being held in conveniently located cities of the United States, with one supplementary meeting in Sweden.

Meeting cities and dates follow:

Dallas, Texas, January 9 - 11.
Jackson, Mississippi, January 16 - 18.
New York City, March 3 - 6.
Salt Lake City, Utah, March 17 - 19.
Des Moines, Iowa, March 27 - 29.
Stockholm, Sweden, July 2 - 7.
Chicago, October 6 - 10 — 44th Annual Clinical Congress.

All Sectional Meetings draw on surgeons of outstanding ability to discuss problems encountered in daily practice, and to disseminate information about new techniques. Usefulness is the keynote to all College programs, which are planned by local committees answering the needs and wishes of doctors within the meeting area. Panels, symposia, papers, medical motion pictures, and question and answer periods characterize the meetings.

Two new features are scheduled for each Sectional Meeting this year: a Fellowship Luncheon, at which a panel of College officials will answer questions about the entire program of College activities, and, in turn, pose questions to the audience; and a Social, rather than Scientific, Dinner Meeting, to which program participants, visiting surgeons, wives and other guests are cordially invited for an informal and pleasant evening of entertainment.

A very brief outline of each meeting follows:

Dallas, Texas, Statler Hilton Hotel, January 9 - 11

Dr. Frank H. Kidd, Jr., and a Committee of Dallas surgeons have planned a well-balanced program of interest to general surgeons as well as surgical specialists. Subjects range from Chemopallidectomy for Parkinson's Disease to Bomb Phenomenology.

Jackson, Mississippi, Hotel Heidelberg
January 16 - 18

Under the chairmanship of Dr. J. Harvey Johnston, Jr., and program chairman James D. Hardy, visiting surgeons are promised a busy three days. Topics will include Complications of Abdominal Surgery, Chemotherapy, Metastasis and Limitations of Surgery for Cancer, Errors in Management of Fractures, Pediatric Surgery, and Management of Multiple Injuries.

New York City, Waldorf-Astoria Hotel, March 3 - 6

This four-day session, under the chairmanship of Dr. John H. Mulholland, will include hospital clinics, separate sessions in surgical specialties,

forum-type papers, technical exhibits, and a special program for nurses planned by distinguished educators in the nursing field under the chairmanship of Ethel Jordan, Professor of Nursing at Skidmore College. Programs in the specialties are being planned under advice of the following authorities in their fields: Bronson S. Ray (Neurological Surgery), Arthur B. DeVoe (Ophthalmology), T. Campbell Thompson (Orthopedic Surgery), Bernard J. Pisani (Obstetrics-Gynecology), John F. Daly (Otorhinolaryngology), Robert H. Wylie (Thoracic Surgery), and Victor F. Marshall (Urology).

Salt Lake City, Utah, Hotel Utah, March 17 - 19

Dr. Alfred M. Okelberry and his committee have outlined three days of concentrated scientific sessions. Among the topics are a Symposium on Care of Patients with Post-Traumatic Paraplegia, panel on ACTH and Cortisone in Surgery, Benign Lesions of the Ileum and Colon, Peripheral Vascular Disease, and other symposia on Trauma, Pediatric Surgery, Cancer, plus papers on Facts and Fallacies in Cardiac Resuscitation, Recognition and Treatment of Obscure and Acute Traumatic Lesions of the Cervical Spine, Physiological Principles in Gastric Surgery, and other subjects.

Des Moines, Iowa, Hotel Fort Des Moines March 27 - 29

Dr. Ralph A. Dorner and his committee of Iowa surgeons have devised a program of paramount interest, which will include an extraordinary type of Symposium on Trauma—including clinical and photographic records of the emergency care of actual cases, a symposium on Fluids and Electrolytes, with Carl A. Moyer and a panel of experts to answer questions on this important subject, a symposium on Cancer, and one on Surgery for Congenital Lesions. Motion pictures, and papers on Cardiac Arrest, Stress Ulcers, Stress Incontinence in the Female, the Jaundiced Patient, and Gastrointestinal Tract Bleeding will also be included in the program.

Stockholm, Sweden, Concert Hall, July 2 - 7

Dr. Oscar Schubert and his committee of Swedish surgeons, and the College Committee on Programs, under the chairmanship of Walter C. MacKenzie have collaborated on a program offering the newest surgical developments in Sweden and North America. Hospital demonstrations and clinics will also be held. Descriptive literature on this program and general plans for the meeting in this beautiful city may be obtained from the College.

Detailed information will be released to all journals well in advance of each meeting. For any additional information, write to Dr. H. Prather Saunders, Associate Director, American College of Surgeons, 40 East Erie Street, Chicago 11, Illinois. Dr. Saunders is in charge of the Sectional Meeting Program for the College.

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6 Months	Neurology Residency at the Winnipeg General Hospital.
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Applications should be made to the Department of Psychiatry by November 1st. Successful applicants will commence their residency July 1st.

The stipend provided varies with the training area. Living accommodation is provided free in some areas, and at nominal cost in others. A limited number of Bursaries and Teaching Assistantship are available.

Additional information and application forms may be obtained by writing to:

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